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Three Papers on Historical Sociology

John Markoff

Allies and Opponents

James N. Baron, P. Devereaux Jennings, and Frank R. Dobbin

Mission Control?

James Geschwender

Portuguese and Haoles

Ronald Corwin and Robert E. Herrlott

Occupational Disputes

**Paula England, George Farkas, Barbara Kilbourne, and Thomas
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Sex Segregation and Wages

Peter Burke and Stephen L. Franzoi

Sampling Methodology

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Women's Support of Feminism

Barbara Tomaskovic-Devey and Donald Tomaskovic-Devey

Social Structural Determinants

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1988

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(Revised January 1987)

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numerals. If after a footnote occurs it is later mentioned, use a parenthetical note "(see note 3)," rather than the superscript number.

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4. Give both last names for dual authors. Give all last names on first citation in text for more than two authors; thereafter use "et al." in the text. When two authors have the same last names, include initials in the text. For institutional authorship, supply minimum identification from the beginning of the complete citation ["... U.S. Bureau of the Census 1963, p. 117) ..."].
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If there is more than one reference to the same author and year, distinguish them by the letters a, b, etc. added to the year ["... Levy 1965a, p. 331) ..."].

The first letter of each word in an article title should be capitalized. Titles of books and journals are printed in italics, so each word of the title should be underlined.

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Goodman, Leo A. 1974a. "Exploratory Latent Structure Analysis Using Both Identifiable and Unidentifiable Models." *Biometrika* 61:215-31.
_____. 1974b. "The Analysis of Systems of Qualitative Variables When Some of the Variables are Unobservable. Part I—A Modified Latent Structure Approach." *American Journal of Sociology* 79:1179-1259.
3. *Collections:*
Clausen, John A. 1972. "The Life Course of Individuals." Pp. 457-514 in *Aging and Society*, vol. 3, *A Sociology of Age Stratification*, edited by M.W. Riley, M. Johnson, and A. Foner. New York: Russell Sage.
Elder, Glen H. 1975. "Age Differentiation and the Life Course." Pp. 165-90 in *Annual Review of Sociology*, vol. 1, edited by A. Inkeles, J. Coleman, and N. Smelser. Palo Alto, CA: Annual Reviews.

See 1986 and later issues for further examples.

ANNOUNCEMENT

Beginning July 1, 1988, manuscript submission fees for all ASA journals will be increased to \$15.

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■ BENIGNO E. AGUIRRE (The Collective Behavior of Fads: The Characteristics, Effects, and Career of Streaking) is Associate Professor, Department of Sociology, Texas A&M University. His current research focuses on the social organization of the 1980 Marielito mass migration from Cuba and on the refugees' adaptation to the United States. Some of his recent work on collective behavior has appeared in the *Pacific Sociological Review*, *Sociological Focus*, and the *American Journal of Sociology*. E. L. QUARANTELLI is Professor of Sociology and Director of the Disaster Research Center at the University of Delaware. He is currently doing research on mass media reporting in

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■ WILLIAM R. MORGAN (Islamic and Western Educational Accommodation in a West African Society: A Cohort-Comparison Analysis) is a research scientist at The Ohio State University Center for Human Resource Research. He is preparing a monograph on the social psychology of educational expan-

sion, based on the present case, two studies of sibling and parent allocation processes using the National Longitudinal Surveys, and a series of documentary case studies of his current practice, third-party facilitation of union-management joint structures. J. MICHAEL ARMER is Professor of Sociology, Florida State University. He is engaged in research on educational expansion in Nigeria and other Third World nations, with primary focus on consequences at the level of individual orientations and careers as well as at the level of national development.

■ ERIC PLUTZER (Work Life, Family Life, and Women's Support of Feminism) is a Postdoctoral Fellow in the Program in Measurement at Indiana University. His current research agenda includes a series of projects examining the political consequences of individuals' work, family, neighborhood, and religious environments. Recent papers have examined the determinants of left political beliefs (*Social Forces*, June 1987) and, with Barbara Ryan, women's decision to inform

their husbands about unwanted pregnancies (*Journal of Marriage and the Family*, forthcoming).

■ DONALD TOMASKOVIC-DEVEY (The Social Structural Determinants of Ethnic Group Behavior: Single Ancestry Rates among Four White American Ethnic Groups) is an Associate Professor of Sociology at North Carolina State University. He is the coauthor of *Recapitalizing America* (with S.M. Miller) and the editor of *Poverty and Social Welfare in the United States*. His research focuses on structural stratification models of poverty, employment, and income distribution processes. BARBARA TOMASKOVIC-DEVEY recently defended her dissertation "Housework as Labor Process: Class Conflict in the Home?", in Sociology at Boston University. She is working on empirical and theoretical issues of gender and class stratification. Her next research project will examine ethnicity by focusing on regional labor market opportunity structures.

OMMISSION

Biographical information for the following authors was inadvertently omitted from the June 1988 issue of *ASR*:

* ROBERT FIALA (Cross-National Determinants of Child Homicide: A Comparative Study of Disaggregated Rates in American Cities) is Assistant Professor of Sociology, University of New Mexico. Current research includes an examination of the attitudes and world views of women in export processing plants in Northern Mexico (with Susan Tiano), studies of the dynamics of labor force structure in the international system, and cross-national research on educational ideology in the modern world. GARY LAFREE is Associate Professor of Sociology at the University of New Mexico. His book, *The Social and Legal Construction of Rape* (Chicago: Dorsey Press, 1988) is forthcoming. His research projects include a comparative study of violent crime victims in the United States and Venezuela (with Christopher Birkbeck) and a study of U.S. trends in black crime rates in the post-World War II period (with Patrick O'Day).

* BRADLEY J. BUCHNER (Social Control and the Diffusion of Modern Telecommunications Technologies: A Cross-National Study) is a Visiting Instructor in Sociology at the University of South Carolina while completing his dissertation research at UNC-Chapel Hill. His research interests include communications and development, social stratification, and political democracy. Current research involves the relationship between communications development and political, social, and economic development in authoritarian and nonauthoritarian states.

ERRATUM

In Reginald W. Bibby, "Religious Economies and Sacred Canopies: Religious Mobilization in American Cities," *ASR*, February 1988, the citation for Finke and Stark 1978 should be vol. 17, rather than vol. 2.

EDITOR'S COMMENT

COMMON COURTESY ON PRODUCING LEGIBLE MANUSCRIPTS

All of us in the *ASR* office—associate editors, reviewers, copyeditors, printers, and others—have noticed a marked deterioration in the physical quality of submitted manuscripts. The main culprit is the microdot printer. An increasing number of manuscripts arrive at *ASR* reproduced on poor paper and with very light microdot print. Even so-called near letter quality microdot print is often inadequate. Sometimes the letters are in gothic type or italics. No matter how large the letters may be, the manuscript is still hard to read. When poor originals are reproduced with poor copiers, the products are virtually illegible. Since reviewers, editors, copyeditors, and printers must spend countless hours poring over these manuscripts, authors should do all they can to submit a product that is easy to read. Probably because authors know their own work so well and can easily read their text on a screen before reproducing it, they assume that they have sent in copies that can be read without undue effort. Others rationalize that, although the original draft may be produced with a microdot printer, they will produce a later or accepted draft on a laser or daisy wheel printer. Authors should show more consideration to reviewers on the very first draft.

Some authors have access to laser printers which indeed are capable of reproducing fine copy. But for reasons I don't understand, they

usually send in laser-produced copies in very small letters (superelite type) and lines that are about one and one-third spaces apart. This trick makes it possible to squeeze 350 words on a page rather than the standard 250 words in double-spaced pica or elite types. With small margins, even more words can be squeezed in. Again, for reasons I do not understand, authors insist on single spacing the abstract, footnotes, and references even though *ASR* instructions clearly state and repeat three times that **EVERYTHING** must be double-spaced. By using all of these artifices, a normal 50-page paper can be squeezed into 30. Can authors be so naive as to think they are putting something over on the *ASR* staff? The actual effect of their stratagems is to increase the time and expense of producing *ASR* and lots of paper gets wasted.

A final bit of advice: When you prepare your final draft, consult a recent issue of *ASR* and follow its format carefully. The great majority of submissions do not follow all *ASR* format instructions. We have to pay cash money for each correction that a copyeditor makes on manuscript. So why not get it right in the first place?

So, as a courteous author, please send in *ASR* manuscripts that are physically easy to read, that follow *ASR* format, and that are produced on good quality paper. From now on, we will check on the physical qualities of the manuscripts and will insist that authors meet minimum standards before we send their papers out for review. Please cooperate.

CORRECTION

Robert M. Jiobu, 1988. "Ethnic Hegemony and the Japanese of California." *ASR* 53:353-67. Mr. Yoshinori Kamo of the University of Washington states the proper term for associations formed by immigrants from the same area of Japan is *kenjinkai* rather than *fujinkai* and that *koden* applies only to monetary gifts given at funerals. He also suggests that the proper English spelling of the "boss" is *danna-san* rather than *dano-san*. Inasmuch as Mr. Kamo is, I believe, a native speaker of Japanese, whereas those informants who read the rough draft were second and third generation Japanese Americans, I would assume his corrections should stand. I thank him for calling them to my attention. Robert M. Jiobu.

MANUSCRIPTS FOR THE ASA ROSE SOCIOLOGY SERIES

Manuscripts (100 to 300 typed pages) are solicited for publication in the *ASA Arnold and Caroline Rose Monograph Series*. The Series welcomes a variety of types of sociological work—qualitative or quantitative empirical studies, and theoretical or methodological treatises. An author should submit three copies of a manuscript for consideration to the Series Editor, Professor Teresa A. Sullivan, University of Texas, Population Research Center, 1800 Main, Austin, TX 78712.

ALLIES AND OPPONENTS: NOBILITY AND THIRD ESTATE IN THE SPRING OF 1789*

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Scholars continue to debate the nature of the bitter political polarization in the French Revolution of 1789. One view is that prosperous urban notables (property-holders, office incumbents, elite professionals, entrepreneurs) held a coherent world-view at odds with that held by nobles. Others argue that the prosperous, nobles and non-nobles alike, shared a vision of social change. I use statements of grievances drawn up at the beginning of the French Revolution—the cahiers de doléances—to measure local variation in the extent to which nobles and prosperous commoners agreed on their programs for the future of France. This variation is used as the dependent variable in a multiple regression analysis to identify the social processes that helped either forge elite unity or drive the two groups apart. Unity was more characteristic of the prosperous areas of the kingdom and the regions more directly administered by the central government, while increasing town size promoted divisions. Mobility opportunities played no role. If the organized activities of intellectuals played a role, it was a unifying force (although a weak one). Finally, the more severe the immediate economic crisis, the more the elites found common ground, perhaps through common concern over revolt from below.

INTRODUCTION

Elite division has been a subject of great interest to students of revolution. In the French case, there has been a long debate. In one view, prosperous urban notables (property-holders, elite professionals, incumbents of office, entrepreneurs) had evolved a more or less coherent world-view wholly at odds with the outlook of aristocrats. Other scholars have argued that by the late eighteenth century, the upper strata of French society had come to share a vision of social change. The entire debate suggests both consensus-shaping and consensus-destroying processes. My aim here is not to decide which forces were the stronger for France as a whole. Instead of asking whether the French nobility and Third Estate were fundamentally at odds, in general agreement, or somewhere in between, I ask where they were more or less in agreement. I

propose to measure the degree of agreement between the nobility and Third Estate around the country in the spring of 1789 and to try to understand the sources of agreement and division. I advance several hypotheses concerning the mechanisms that may have shaped the level of consensus. These hypotheses provide the framework for a multivariate analysis of how variations in social circumstances affected the divisions with which local elites entered the revolution.

My sources are the grievance lists—the *cahiers de doléances*—of 1789. In choosing their deputies to the coming meeting of the Estates-General, the three estates drafted statements enumerating their demands. Virtually every adult male noble could participate in the deliberations of their order. The Third Estate assemblies were composed of delegates from preliminary assemblies organized in a complex electoral process. These assemblies were dominated by the upper reaches of town society by urban office-holders, professionals, merchants, and rentiers, who, however, were not necessarily unified and who certainly made concessions to the delegates from the countryside.¹ I shall refer to the griev-

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¹ On the convocation, see Brette (1894–1915), Hyslop (1936), and Cadart (1952).

ances and proposals of the Third Estate documents as the views of the urban notables.

I am concerned here with the level of agreement between the nobility and Third Estate in each district on a program of actions to be undertaken with regard to the subjects under discussion. The data are drawn from a content analysis of the *cahiers*, which has been described elsewhere (Markoff, Shapiro, and Weitman 1974). Specifically, I measure the propensity for the Third Estate and nobility of the same electoral district to insist on the same actions when they discuss the same subjects. If both the noble and Third Estate *cahiers* take up the notorious salt tax, for example, do they both demand its unqualified abolition? If so, they agree on their program for this particular subject; if not, they do not agree. The overall agreement measure may be thought of as a probability: For each noble-Third Estate pair, I consider those institutions treated by both. For each such institution, I ask whether an action found in one *cahier* of the pair is found in the other as well. Aggregating for all institutions common to the two documents, I compute the probability that a common institution will have a common action.²

For those electoral districts that produced distinct noble and Third Estate *cahiers*, both of which have survived, the measure of agreement on the program ranges from .04 to .53. I add several other districts whose electoral histories were unusual but whose levels of agreement were clearly quite high or quite low.³

² For a more thorough discussion of the measurement of agreement used here, see Markoff (1982). Some other studies using this measurement are presented in Markoff and Shapiro (1985); while that study identified issues on which there was agreement, my study concerns the geographic variation.

³ I slightly expanded the data base for this study by including two classes of districts that did not produce two distinct documents: (1) *Joint cahiers*. The nobility and Third Estate sometimes chose to collaborate on a *cahier*. In the heated climate of 1789, the attempt at a joint statement shows a very high level of agreement. But the appearance of a perfect agreement is the result of this unusual but permitted collaboration. There is much agreement in these instances; but because it does not seem reasonable to regard theses as instances of perfect agreement, I assigned them a score of .53, the highest score achieved by other districts. (2)

THE FORGING OF UNITY, THE SHAPING OF DIVISION

State Formation

Several possible mechanisms may have bound the nobility and Third Estates together and others may have torn them apart. The development of central authority was an intertwining of several distinguishable yet related processes: the defeat, often literally on the battlefield, of those with independent coercive forces; the dismantling of independent judicial, legislative, and administrative authorities; the extraction of resources through taxation and the protection (and even expansion) of those resources through developmental policies; the proliferation of symbols of legitimate authority that represent either the nation as a whole or the central government and the displacement of other symbolic representations of legitimacy; the development of mechanisms for recruiting an administrative staff not dependent on social strata with claims to autonomy from the crown; the elaboration of a bureaucratic model of justification for power, with its appeal to the technical requirements of efficiently achieving organizational goals.

Although each of these processes had its own timetable, the general encroachment of the central government on those who asserted some autonomy was a constituent part of Old Regime politics. The government continually struggled to determine the conditions of

Brittany: This province's nobility, locked in a struggle against urban elites in 1788, refused to participate in an election in which the Third Estate had an independent voice after failing to have the Provincial Estates they dominated name the deputies. Although we have no noble *cahiers* for Brittany, to reject Brittany would exclude an important region in which agreement is known to be extremely low. The distinctive nature of that province's politics was the combination of an intransigent aristocracy with a Third-Estate leadership whose radicalism stood out as soon as the Estates-General assembled. I assigned Breton districts the lowest agreement score for any other *bailliage*.

One sign that the ad hoc assignments of agreement scores for the cases of jointly written *cahiers* and for Brittany were reasonable may be the multiple regression analysis in Table 2. Of the nine cases most poorly fit by the final model in Column 10 (studentized residuals greater than 2.0), none is from either of these categories.

taxation; sought to reorganize France in light of plans for economic development (by reducing toll collections in private hands, for example); assumed new policing and regulatory functions; and developed provisioning policies for times of scarcity. Rather than a single assault on society by the state, there was continual negotiation and struggle, with uneven, uncertain, and contradictory results. By the eighteenth century, this process had divided France into two broad zones with differing degrees of state penetration and control. In areas known as the *pays d'états*, the agents of the crown had their authority limited and contested by Provincial Estates that retained variable, but still often considerable, administrative responsibilities. These Provincial Estates sometimes commanded important financial resources and publicly asserted their positions (an important right, because despite the ineffectiveness of the censorship, public debate was hardly open to all comers). In the *pays d'élections*, on the other hand, the dominance of centrally appointed officials was more secure.

The expansion of central authority provided Alexis de Tocqueville with some of his most interesting suggestions about the roots of the French Revolution. The uneven nature of that expansion provides an opportunity to test Tocqueville's thesis. The long process of central state development, Tocqueville argued, eroded the basis on which others would accept the nobles' position in French society. State development also culturally transformed the nobility itself, and came close to preparing them for their own elimination as a social force. With regard to central state development, Tocqueville analyzes the legitimacy of the social order as a question of services. One's sense of justice is not violated, in his view, if greater rewards accrue to those who perform greater services. To the extent that the nobility were central in providing services through their responsible domination of public affairs, and to the extent that noble lords furnished protection from violence, maintained the roads, policed economic transactions, succored the poor, supported the true Church, and dispensed justice among the contentious, the privileges of the nobility could be seen as deserved benefits. The nobles' social role was substantial; they bore the costs of performing that role and they were perhaps seen as indispensable. But as these functions passed into the hands of the

central state, the entire justification for noble privilege evaporated. As, for example, the legitimate exercise of violence became the task of the royal army or as the policing of the economic life of the kingdom passed into the hands of government inspectors and planners, the moral acceptability of a special noble status was eroded, even though the King's generals and economic managers were themselves recruited from the nobility.

As the nobles' public responsibilities were being whittled away, royal policy tended to leave their privileges intact in the hope of obtaining their assent to the changing institutions of France. Indeed, one may speak of the growth of new areas of privilege, for the nobility often succeeded in assuring itself privileged consideration for the positions opened up by the expanding central government. (The more powerful and potentially dangerous nobles were often granted government subsidies.)

The second strand of Tocqueville's argument is even more important in this context. The nobility itself, he contends, underwent a profound moral transformation by adjusting to the new social context in which royal bureaucrats were beginning to impose a universalistic and antitraditionalist approach to public life. The Paris-based bureaucracy increasingly refused to recognize the sanctity of local and regional distinctions, of birth-based differences among the King's subjects, or of anything but impersonal and technical criteria for the making of decisions. The emerging state was beginning to recognize isolated individuals rather than long-standing hierarchical corporate bodies as the true components of the social order. Even the nobility were highly placed agents of this bureaucratizing government. The many nobles who were negotiating with the state and trying to adjust to it, were, in Tocqueville's view, largely won over to its values. Their own worldview was increasingly indistinguishable from that of other well-to-do persons. They did not differ in values from the bourgeoisie, only in privilege (Tocqueville [1856] 1955, p. 81).

The similarity of condition and outlook by no means precluded mutual hostility. The bourgeoisie were especially incensed that these nobles were distinguished from them in no way but by their benefits. As for the nobility, Tocqueville argues that the absence of any genuine social responsibility within the

framework of an accepted status hierarchy isolated them from the commoners. If there was no longer a basis for pride born of service, the nobility of the eighteenth century maintained their pride through contempt for their inferiors.

While Tocqueville's analysis leads us to expect antipathy between nobles and Third Estate, most views in the *cahiers* ought to be similar because their circumstances and values had grown so alike. Indeed, his own analysis of the nobles' *cahiers* stresses their liberalism (apart from a half-hearted defense of some of their own privileges). The Tocquevillian contention I test here, then, is that in the *pays d'élections*, where central control over public life was further advanced, the convergence of nobility and Third Estate on most issues will be greater than in the *pays d'états*.⁴

The Permeability of the Third Estate-Nobility Barrier

The capacity of the nobility to exclude commoners from its ranks or of well-to-do commoners to cross into the nobility was not uniform across France. Of the several routes into the nobility, the occupation of certain offices was by far the most common.⁵ The degree to which such offices were a channel depended on local social institutions. Were there such offices in a locality? If such offices existed, were they effectively monopolized by the nobility so that no commoner could acquire them and benefit from their ennobling powers? In some 40 electoral districts, some channels across the barrier existed.

One plausible hypothesis is that the capacity to cross this threshold indicates the existence of an elite social world, within which divisions based primarily on birth are relatively unimportant. If so, an urban elite,

composed indifferently of nobles and non-nobles who attend the same parties, frequent the same salons, mingle in their public duties, and are conversant with one another in their private roles, might be in an advanced state of formation. One would suspect that this common social environment, with its free and easy interchanges, would lead to similar views on social matters, and thus to an increasingly unitary elite.

But the significance of mobility across this barrier is less obvious than these *a priori* claims assert. Perhaps the very possibility of mobility might induce mutual avoidance. If legal guarantees of exclusivity are weak, might not many nobles self-consciously create social barriers whose existence would be less necessary when it could be assumed that the lower orders know their proper place in a fixed, immutable hierarchy? Consider Tocqueville's ([1856] 1955, pp. 81-96) argument on the development of a castelike mentality within the nobility precisely as the outcome of the loss of a capacity to legally defend its corporate character. And might not the Third Estate's consciousness of difference be exacerbated by the discovery of the illusory nature of eradicating the stain of common origins. The ennobled were hardly guaranteed social acceptance by the established nobility. Michel Vovelle (1980, pp. 295-310) described, in his study of the mental world of a single upwardly mobile *bourgeois*, how difficult it might be to become fully recognized and accepted as a noble and to fully regard oneself as such. A legal redefinition of an ambitious commoner as noble might actually make more painful a sense of difference. And in regions where such mobility was noticeable, might there not be a special bitterness for the large numbers of *bourgeois* who were not ennobled but who saw others in their midst crossing the legal barrier, as Shapiro and Dawson (1972) have cogently argued?

We have, then, two contrary propositions.⁶ Did a relatively permeable barrier help form a unified elite indifferent to the traditional image of the society of Estates? Or did the possibility of traversing the legal barrier foster the development of other, informal, but not less effective, closures that blocked

⁴ The preceding discussion of Tocqueville, including the use of the *pays d'états-pays d'élections* distinction as an indicator of the extent of penetration of central state authority, is heavily indebted to the work of Sasha R. Weitman (1968), who, along with Guy Chaussinand-Nogaret (1976), copiously documented the extent of liberal views in the noble *cahiers*.

⁵ A fairly small number of people were ennobled by special royal dispensation and an even smaller number by military service (Shapiro and Dawson 1972, p. 170).

⁶ For a fine survey of the contradictory contentions of sociologists and historians on the political consequences of mobility, see Shapiro and Dawson (1972).

communication, augmented hostility, and encapsulated the well-to-do among others of their own Estate—paving the way for distinct responses to the crises of the 1780s?

Town Size

If any localities might be expected to develop drastically different outlooks among their elites, it is the large towns, whose size and institutional diversity furnished niches for considerably more than a single, small, closed group. If there was a commercial, financial, or manufacturing elite sensitive to the inadequacies of the old order and antipathetic to idle frivolity, inefficacy, and waste of a retrograde establishment, would it not be more likely to make its presence felt and its voice heard in the larger towns? In these towns, opposed interests lived in close proximity. On one hand were the managers of the institutions of the current order—royal administrators, judges, important ecclesiastics, the officer corps of the garrison towns, and leaders of the Provincial Estates. On the other hand were other interest groups, whether commercial, financial, artisanal, or professional, who chafed at these institutions. The weight of commercial or military or administrative or judicial or ecclesiastical elites was different from one place to the next. But on the whole, larger towns were places with many rival groups whose antagonistic experience of each other may have led to distinct outlooks and, in 1789, to distinct programs. Such elite divisions would not necessarily have been between nobles and commoners, but any such tendency could easily have been exacerbated in larger and more varied urban settings.

In the crisis atmosphere of the late 1780s, moreover, we must consider the presence of a dangerous underclass, especially urban crowds. As the political breakdown of the Old Regime helped mobilize the population, the pressures on urban elites from below was considerable, as was the temptation to recruit and canalize a popular force for one's own goals. It seems plausible that the nobility and urban notables in the spring might assume different positions under these circumstances. The hypothesis is strengthened by the more complex popular strata of the larger towns.⁷

⁷ On the intensity and variety of urban political upheaval, see Ligou (1960) and Hunt (1976).

Intellectual Life

The development of an intellectual culture deserves special attention. The role of intellectuals, if any, in establishing a proper pedigree for the revolutionary vision has been the focus of a vast literature. Revolutionary governments honored those whose paternity they wished to claim. The conservatives of the early nineteenth century were persuaded that a group of visionaries, whose inexperience of practical affairs was matched only by their reckless condemnation of tradition, had misled themselves and others in their simple-minded enthusiasm for social change.

Gauging the social impact of Enlightenment intellectuals is a formidable task. A writer may criticize the existing social order in some ways while accommodating himself to it in others; the interplay of criticism and accommodation is very complex. The aggregate impact of a diverse and often mutually hostile group of writers may be still more difficult to assess. There are, however, two broad claims in the scholarly literature. In the first view, the Enlightenment is the vehicle of a rising group (usually identified as the *bourgeoisie*) against the dominant aristocratic stratum. In the second, the Enlightenment is the vehicle by which an elite of diverse social origins develops a liberal critique of the state. Albert Soboul (1962) advocates the former in the title of his introductory chapter on the Enlightenment, "The Philosophy of the Bourgeoisie." He tells us that "the intellectual origins of the revolution are to be sought in the philosophy that the bourgeoisie elaborated since the 17th century." We learn in the next few pages that Voltaire's aim was "to give the government over to bourgeois proprietors," while Rousseau expressed "the political and social ideal of the petite bourgeoisie." Soboul finds the unity of French Enlightenment thought in its "opposition to aristocracy." As for their economic views, "the upper bourgeoisie was aware that the development of capitalism required a transformation of the State." While Soboul (pp. 69–79) adds that "one probably ought to add some nuances to these contentions" (and certainly does add some), in its broad lines, the Enlightenment is seen to fortify the bourgeoisie for its overthrow of the older ruling stratum by identifying its class interests with the progress of humanity and the advent of reason.

Recent empirical studies of participants in the activities and institutions that structured intellectual life suggest something quite different and more consonant with the thesis of Denis Richet. Richet argues that the Enlightenment may be seen, initially, as a gradually developing aristocratic opposition to the expansion of royal authority. To this increasingly clearly formulated liberalism that defined itself as an alternative to despotism was added the converging antipathy of commercial and financial interests against the heavy hand of a state-directed economy. The bourgeois element, in this view, is a later graft onto a flourishing aristocratic tree. The research of the past two decades suggests that in many ways the intellectual activities of the eighteenth century dissolved the legal demarcation into distinct orders: many subscribers to the Diderot Encyclopedia were noble, for example. Even more strikingly, the meticulous scholarship of Daniel Roche has revealed that the membership of the Provincial Academies, perhaps the most prestigious of Enlightenment institutions (the great Paris academies apart), contained a majority drawn from the nobility and clergy (Richet 1973; Darnton 1979; Roche 1978).

I explore a limited aspect of this complex problem. Did the presence of a rich intellectual life help forge a common outlook among the nobility and the commoner elite, or did the activities of intellectuals sharpen their divisions? Did the work of intellectuals have any impact at all? I measure variations in the density of some of the most characteristic institutions of intellectual life in the eighteenth century to see how that activity affects the level of agreement.

Mapping the geography of eighteenth century intellectual life, which permits us to roughly locate activities of intellectuals, has a strong tradition going back to Daniel Mornet. The *provincial academies*, together with the Parisian academies that were models for some of them, formed an active network whose members sponsored the development of what they took to be useful knowledge. Through multiple memberships and essay contests this became a formidable nationally connected movement. These bodies were the creations of local elites with sufficient backing at court to get the necessary official approval (Roche 1978). The *Royal Agricultural Societies* were more clearly creations of the central authorities and, as their name tells us, more

specialized in their concerns (Bourde 1967; Justin 1935). Less formally constituted and varying greatly in the extent of their organized activities were groups classified by Daniel Mornet as literary societies and *chambres de lecture*, although the distinction—the first more structured than the second—is by no means clear-cut. Both were groups with more or less well-defined paid memberships (Mornet 1954). The *public library* not only helped distribute books but was also a place where intellectuals, perhaps of limited means, could meet (Mornet 1954). The same spirit of public instruction is shown by the public promotion of science, which the existence of *instruction in physics* indicates (Dainville 1978). Although the regional consumption patterns of the literature of the Enlightenment are inadequately known, we are thankful for Robert Darnton's analysis of data on subscriptions to the Diderot-D'Alembert encyclopedia, the single work that best embodies the Enlightenment (Darnton 1979). Finally, the *masonic lodges*: although the role of freemasonry in relation to the Revolution has been the subject of much commentary (a fair amount of it rather crackbrained), and the serious recent scholarship on the subject suggests no clear relationship between membership and revolutionary politics, these lodges were certainly one of the significant institutions around which eighteenth-century intellectuals congregated (Halévi 1984).

It is not the distinctions among these various activities that concern us here.⁸ I therefore combined measures of these activities into a nine-point scale. Possession of an academy, royal agricultural society, literary society, *chambre de lecture*, public library, or instruction in physics each give an electoral district (*bailliage*) one point. *Bailliages* with more than the median number of masonic

⁸ These distinctions are sometimes blurry. The differences between a literary society and a provincial academy might be a question of the political pull at court of the local patriciate trying to boost the reputation of their town rather than of the intentions or even the activities of the intellectuals who met; whether or not there was a royal agricultural society might depend on whether or not the provincial academy succeeded in suppressing potential competition. In other instances it is not even clear just what happened in these bodies.

lodges are assigned one point, as are those having more than the median number of encyclopedia subscriptions. (Overall *bailliage* scores on this index range from 0 to 8.)

Developed and Underdeveloped France

The crude division of France into a relatively prosperous North and East and a relatively poor South and West is by now a commonplace, but one still worth considering. If institutions had already engendered within the Old Regime the notables of the nineteenth century, it should be most apparent in the more commercialized regions. We are looking for an upper stratum who (a) controlled resources relevant to the marketplace; (b) who were relatively unthreatened by (or perhaps even welcomed) the dismantling of the corporate structures of the old order; (c) for whom economic individualism was an opportunity rather than a threat; and (d) who expected to dominate the lower strata through the "dull compulsion of economic relations" (Marx) and were less concerned to keep the older structures of local domination intact. In short, we are looking for a "modern," perhaps self-consciously modern, elite (commoners or nobles), for whom the divisions of the society of orders had become irrelevant nuisances. Areas in which a new elite with a sense of partnership across the barriers dividing the Estates might have been emerging should include those with extensive road networks, high crop yields, a literate rural stratum, a developing rural proletariat, and a rural cottage industry.

Economic Crisis

Last of all, we examine the effects of the economic crisis. The combination of crop failure, unemployment, skyrocketing prices, and massive descent from poverty to catastrophe has often been considered a source of great upheaval, particularly since the pioneering work of Camille-Ernest Labrousse (1933). Most attention has focused on that part played by the dismal conjuncture on mass mobilization.

But France's elites could not have been unaware of economic difficulties. Even those unthreatened by empty stomachs could have felt threatened by the hungry. Those concerned about the long-run economic viability of France (or their own pocketbooks) could

have been confronted by economic disaster; merchant-manufacturers faced severe losses as the incomes of their usual customers were devoured by the soaring price of bread, and many investors faced bankruptcy. Those who were creditors of the state—a significant income source for many of the upper strata—could have seen the shakiness of government revenues as linked to the destitution of the taxpayers.

Such critical junctures both forge and sever ties. Noble and commoner elites in one place might have felt their differences with greater urgency the more severe the local atmosphere of tension. Elsewhere, a need to paper over differences to rise to the challenge of the disintegrating state might have prevailed, particularly if economic hardship threatened the autonomous entry onto the political stage of the urban or rural populace. I examine these tendencies with two measures of the severity of the crisis: the average price of wheat in 1789 and the increase in the price of wheat over its minimum value since 1784.⁹

A PRELIMINARY LOOK AT THE EVIDENCE

This is clearly a multivariate problem; in Table 1, each variable is a dichotomy, and the mean agreement scores of electoral districts with high and low scores on that dichotomy are displayed. (Continuous variables are dichotomized at the median unless otherwise stated.)

No single variable comes close to determining the forging of either a consensus or a total polarization. Although there are many significant differences in this table, the largest shift that a transition from the Low to the High value produces in the probability of identical demands for action is .10.

First, the larger a district's largest town was, the less its noble and Third Estate assemblies saw eye to eye on the regeneration of France. But did the development of new commercial groups in these large towns, at least to some extent, account for the greater gap between noble and non-noble elites there?

⁹ On the rationale for using wheat prices as a general indicator of economic hardship see Labrousse (1933).

Table 1. Agreement on a Program (Third Estate and Nobility) by Selected Characteristics of Electoral Districts

Value of Dichotomized Variable Listed Below	Low	High
Population of largest city	.30	.25*
Length of major road	.28	.27
Number of road intersections	.28	.27
Administrative centralization ^a (<i>Pays d'états</i> vs. <i>pays d'élections</i>)	.25	.29+
Proportion arable	.24	.29*
Proportion grassland	.25	.29*
Proportion wasteland	.30	.24**
Proportion woodland	.24	.31***
Proportion planted in vines	.25	.29*
Openfield region ^b	.24	.30**
Plains other than openfield ^b	.27	.29
Mountain area ^b	.30	.20***
Mediterranean south ^b	.27	.28
Presence of intellectual institutions ^c	.30	.26*
Presence of ennobling offices ^d	.28	.24+
Price of wheat	.26	.28
Increase in price over minimum since 1784	.24	.30***

^a High value = *pays d'élections*.

^b High value = location in region of (openfield, plains other than openfield, etc.).

^c High value = any of the following are present: academy, literary society, *chambre de lecture*, course in physics, public library, royal society for agriculture, *Encyclopédie* subscriptions above median, masonic lodges above median.

^d High value = ennobling offices present.

+ $p < .1$.

* $p < .05$.

** $p < .01$.

*** $p < .001$.

Data Sources: City size: "Populations des villes suivant les états envoyés par Messieurs les intendants de Province, années 1787-1789. Eléments ayant servi à la formation des États de Populations du royaume de France" (Archives Nationales, Série D VI bis, Dossier 47); Ministère des Travaux Publics, de l'Agriculture et du Commerce (1837); *road length and road intersections:* Vidal de LaBlache (1911, p. 379); *administrative centralization:* Atlas Historique et Géographique Vidal-Lablache (1960, pp. 36-37) (modified by counting Dauphiné as *pays d'élections*); *geographic zones* (openfield Mediterranean South, etc): Dion (1981, p. 10) and Prince (1977, p. 142); *arable, grassland, wasteland, woods, vines:* Fel (1977, pp. 221-22); *wheat prices:* Labrousse (1933, pp. 106-13); *ennobling office:* Shapiro and Dawson (1972, pp. 186-90); *academies:* Roche (1978); *agricultural societies:* Justin (1935, p. 275); Sée (1924, pp. 21-33); *literary societies, chambres de lecture and public libraries:* Mornet (1954, pp. 306-16); *physics courses:* Dainville (1978); *masonic lodges:* Le Bihan (1967, 1973); *Encyclopedia subscriptions:* Darnton (1979, pp. 587-93). On locating cities in electoral districts and estimating *bailliage* values for departmental data, see the brief discussion in Markoff (1985).

Is the greater divergence caused by entrepre-

neurs who felt shackled by the archaisms of the old order? Perhaps. But it is in the economically more prosperous zones that the Third Estate and nobility were in greater agreement. In the towns with commercialized rural hinterlands, the Third Estate and noble assemblies drafted documents with relatively high levels of agreement. The precise nature of the region's commerce seems not to matter so much as its existence: the arable's cereals, the grassland's livestock, the wood, and the wines all provided contexts in which the upper strata could agree.

Consistently, the uncommercialized areas characterized by extensive wasteland agreed less. No doubt the contrast between the agreement-enhancing effect of location in the commercialized region of openfield farming of the North and East and the more polarized opinion found in mountainous France is the same phenomenon examined under somewhat different rubrics. Yet the matter is not clear-cut, because the presence of roads appears irrelevant. But if the data do not uniformly suggest that in the more commercial regions, noble and commoner elites were converging on a common outlook, they are at odds with the view that commercialization was the wedge that created a new vision of the world, energizing the commoners who possessed this vision for their struggle against a nobility who did not share it. Whatever a commercialized countryside did to the social vision of the upper levels of the Third Estate, it appears to have done to the nobility as well.

Before leaving the economic variables, we need to look at the conjunctural ones. There is no indication that the economic crisis was driving the Third Estate and nobility apart. The price level is unrelated to elite agreement, whereas the increase in prices is associated with an increase in local consensus. If the latter is not a spurious relationship, it is worth an extended look. We must consider the possibility that, in the face of severe hardship induced by a series of economic disasters, the materially comfortable banded together to contain the common threat from below.

American sociology is becoming increasingly concerned with questions relating to the state. Table 1 shows that the state had consensus-forming tendencies of about the same strength as integration into commercialized trade networks. In the *pays d'élections*, it appears that the Third Estate and nobles were achieving a common outlook, as Tocqueville

had argued. Preliminary indications are that both intellectual life and mobility opportunities are associated with greater division.

But all this is extremely tentative; these variables are too highly and too complexly associated with one another to permit us to be content with a series of bivariate observations. Both the presence of ennobling offices and the characteristic institution of intellectuals, for example, are closely related to town size. This opens the possibility of spurious relationships; it also opens up the possibility that there are relationships whose true character is masked by their linkage to other processes. We need a more refined procedure than a set of mean differences.

MULTIVARIATE ANALYSIS

It is appropriate to examine several regression models because of the intertwining of the measurements both theoretically and empirically. To begin with, the indicators measure concepts that differ greatly in theoretical status. One might focus on long-standing structural constraints or on the immediate crisis. Because we have indicators of both long-standing social conditions and variations in the severity of the immediate economic crisis, we can test the explanatory power of both sets of indicators separately as well as jointly.

Second, some of the key hypotheses involve the measurement of indicators that will be correlated. No one will be surprised that either mobility opportunities or the density of intellectuals' associations are correlated with the size of an electoral district's largest town. Or, consider the extent of woodland; this variable is significantly correlated with several others. It is negatively associated with the extent of arable, no doubt a result of clearing trees for the expansion of ploughland. This may in turn explain its correlation with the steepness of the rise in grain prices, because there were very likely fewer local reserves to smooth out the shortages. The extent of woodland is also negatively associated with town size, a relationship probably due to the depletion of nearby sources of timber by the swelling urban construction activity, as well as the urban use of wood as fuel.

One way to approach the study of regression models with correlated independent variables is to study more than one model. Table 2 presents a variety of models. I

substituted the logarithm of the odds ratio for the probability of agreement to avoid some of the problems associated with a dependent variable that varies between 0 and 1. To keep this presentation relatively uncluttered, I have only retained coefficients with *t*-values greater than 2. I use supplementary tables to further explore some of the relationships shown in this table.

Town size is consistently associated with an increased separation between the views of the nobility and Third Estate. Although the size of the coefficient varies a good deal depending on what other variables have been entered into the equation, the character of the relationship is not in question. I have already suggested several processes that might be at work here, for urban vitality involves diverse forms of social life. Perhaps it was in the commercial centers that the clash of old and new was most keen. Town size in itself might stand for any aspect of this diversity and much more besides. Table 3 shows the consequences of adding indicators of market integration, intellectual activity, and mobility from Third Estate to nobility.

Only intellectual activity has much consequence for the relationship of the size of a district's largest town and the level of agreement shown by assemblies of its Third Estate and nobility. Controls for road length and mobility opportunities have no consequence to speak of; note the small size of their coefficients in column 2. On the other hand, controlling for these variables, as well as intellectual institutions, has actually revealed a strengthened relationship between town size and the divergence of positions between commoners and nobles.

This table reveals the complexity of town vitality. Although the aggregate impact of the milieu of a large town divided noble and Third Estate leaderships, some facets of town life did the opposite. When we control for the presence of an active intellectual life, the cumulative impact of other characteristics of the urban landscape is even more divisive, as if the town's intellectual culture moderated, rather than exacerbated other sources of division.

The insignificance of mobility opportunities has been well treated by Shapiro and Dawson (1972). Although mobility opportunities, as shown in Table 1, seem to enhance disagreement, as Tocqueville suggests, the more important conclusion from Table 3 is that once we have controlled for town size,

Table 2. Selected Regression Models for Agreement of Nobility and Third Estate (Log Odds) (Standardized Regression Coefficients with *t*-value in Parentheses)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Population of largest town (log)	-.204(-2.70)	—	-.235(-3.17)	—	-.154(-2.31)	-.203(-.321)	—	-.178(2.49)	—	-.180(2.89)
Administrative centralization (= pays d'états vs. pays d'élections)	—	.221(2.92)	.250(3.37)	—	.211(3.12)	.338(4.92)	—	.201(2.91)	—	.348(5.15)
Proportion grassland	—	—	—	—	.163(2.52)	.229(3.70)	—	—	.178(2.76)	.243(4.00)
Proportion woodland	—	—	—	.184(2.58)	.193(2.62)	.226(3.26)	—	—	—	.159(2.24)
Proportion land planted in vines	—	—	—	.296(4.08)	.281(3.85)	.175(2.44)	—	—	.343(5.12)	.196(2.79)
Proportion wasteland	—	—	—	-.411(-5.97)	-.349(-5.14)	-.461(-6.80)	—	—	-.296(-3.12)	-.290(-3.34)
Mediterranean south	—	—	—	—	—	.365(4.82)	—	—	.261(3.43)	.419(5.52)
Price of wheat in 1789	—	—	—	—	—	—	.200(2.85)	.200(2.85)	—	—
Increase in wheat price over minimum since 1784	—	—	—	—	—	—	.390(5.55)	.336(4.77)	.346(3.66)	.287(3.05)
<i>R</i> ²	.042	.049	.103	.287	.359	.439	.182	.243	.356	.470

Table 3. Regression of Agreement (log-odds) on Aspects of Urban Communities Standardized Regression Coefficients (*t*-values in Parentheses)

	(1)	(2)	(3)
Population of largest town (log)	-.204 (-2.70)	-.502 (-3.77)	-.450 (-3.64)
Length of major roads	—	-.016 (-0.14)	—
Number of road intersections	—	.107 (1.04)	—
Mobility opportunities	—	.030 (0.30)	—
Index of intellectual activity	—	.330 (2.41)	.308 (2.50)
R ²	.042	.086	.076

mobility has no independent effect. If mobility plays a role, it is as one strand of the fabric of Old Regime urban life that cannot be disaggregated from other strands. And it does not seem to play much of a role; controlling for mobility has no effect on the relationship of town size and agreement.

The absence of a relationship between two variables is often of interest only if it disproves some respected theory. Here what is interesting about the insignificance of variation in mobility opportunities as a predictor of social division is the large place the *idea* of mobility restrictions played in those divisions. Third Estate grievances about barriers to career advancement in the Old Regime are one of the striking features of their *cahiers*. Indeed, by one measure, this is the question on which the nobility and the Third Estate were most likely to differ profoundly (Markoff and Shapiro 1985). For example, of those Third Estate *cahiers* that addressed the criteria for military careers, 72 percent insisted that position in the officer corps be open to members of the Third Estate, while only 20 percent of relevant noble documents took a similar stand. There is a similar gap in relation to other institutional settings (see Table 4).

It is important to note that although the nobility and Third Estate divided sharply over mobility issues, the actual level of mobility

has no effect on the extent of that division. The positions taken by the two orders on mobility issues are not governed by the local situation. The significance of mobility questions does not derive from immediate experience. Perhaps it derives from an image of the national scene, but where does this image come from? It would be important to know more of the process by which the desire for "careers open to talent," as their *cahiers* so frequently put it, penetrated the Third Estate so widely (and so independently from variation in the actual degree to which careers were already open). But whatever the nature of that ideological process, it is certainly something beyond a mere reflection of experience.

While variations in mobility opportunities are politically inconsequential, intellectual enterprise may have played a greater role. Table 3 shows that the presence of academies, libraries, literary societies, instruction in physics; more than average number of subscriptions to the Encyclopedia; and more than the usual number of masonic lodges have an impact on elite division. Contradicting some recent literature, extensive intellectual activity is associated with forming common views rather than conflicting ones.¹⁰ This is

¹⁰ Note that this overturns the bivariate relationship shown in Table 1.

Table 4. Selected Grievances on Mobility Opportunities (Percentage of Documents Discussing Posts and Career Opportunities that Favor Opening Careers)

	That only technical qualifications and achievements be considered in making appointments		That members of the Third Estate be permitted access	
	Third Estate	Nobility	Third Estate	Nobility
Administrative agencies	38	0	54	0
Church	26	22	62	44
Judiciary	19	13	54	27
Military	22	33	72	20
Posts in general	41	27	41	18
Miscellaneous positions	18	0	55	0

consistent with such recent studies as Darn-ton's (1979) exploration of whether the readers of the Encyclopedia were members of the privileged orders, or Daniel Roche's (1978) portrayal of provincial academies, in which nobles and commoners forged a common identity as citizens of the Republic of Letters.¹¹

But even the relationship of intellectual activity and polarization is fairly weak. It is reduced by the introduction of any of the other variables (and hence does not enter into Table 2). Depending on which other variables are entered, the *t*-value varies but, at best, is below the cut-off of 2 adopted here. On the other hand, it is always hovering on the margins of significance. Indeed, deleting cases reveals that there are subsamples for which the effects of intellectual activity are significant even after controlling for *all* other variables in any of the equations in Table 2. This cautions us against drawing conclusions based on this data. We can, however, reject the thesis that the typical institutions of the Enlightenment, on the whole, divided the orders.¹² If there was any effect, it was a weak, consensus-forming one. Given that the coefficient is acutely sensitive to the precise delimitation of the sample of districts, I am reluctant to be more definitive based on these data.

Note, finally, that town size accounts for but a limited portion of the variance. This turns out to be a general feature of this analysis; what are sometimes considered "master processes" explain something but leave a great deal unexplained.

This observation returns us to Table 2. We

have taken the *pays d'élections* to be regions where central authority was firmer than in the *pays d'états*. Columns 2 and 3 show that administrative centralization is about as consequential as town size and that it is, in its effect on agreement, independent. Indeed, the size of its regression coefficient is not sharply affected by the introduction of most of the variables we have used in this analysis, until we arrive at the last columns; introducing "Mediterranean South" actually increases the strength of the relationship.

The evidence on administrative centralization confirms Tocqueville's stress on the formation of a common culture, hostile to Old Regime institutions, by an expansionist monarchy's increasingly weighty bureaucratic staff. The nobility's resentment of the encroaching state fosters a rejection of arbitrary state authority; the state's destruction of traditional structures of authority leads even the nobility to become individualistic and democratic rather than corporatist and hierarchical. Tocqueville depicts a nobility persuaded to an outlook inconsistent with its own continued dominance.

But one broad belt endowed with regional self-government, the Mediterranean South, had some special characteristics that ran counter to the general trend. Although *pays d'états* generally are not regions of agreement, introducing lower Languedoc and Provence¹³ as a separate variable shows some unusual features. Why did the Mediterranean South forge unity rather than create discord? The institutional histories of Languedoc and Provence hint at different processes in the neighboring Mediterranean provinces. To begin with Languedoc: one of the most divisive issues in 1789 concerned the structure of the Estates-General. The demand that the Estates-General be a single body, in which the Third Estate would have an expanded representation and each individual deputy would vote, collided with the insistence on the old model of three separate chambers, each with a single collective vote and perhaps a veto. In Languedoc's Provincial Estates, the Third Estate enjoyed augmented representation and voting was by head

¹¹ Of some 6,000 academicians, 57% were nobles or clergy (Roche 1978, I, p. 197).

¹² This is, of course, not to exclude the possibility that particular writers, organizations, movements, or currents of thought were polarizing. It is a statement about aggregate impact. Robert Darnton (1982, pp. 1-40) argues, for example, that in the generation after Voltaire, the Enlightenment may be thought of as dividing into a group of rather successful and prestigious intellectuals who lived on government grants of one sort or another and produced a tame body of social commentary from which the earlier critical edge was diluted by respectability; and a deeply embittered group who scrounged for a living, who had failed to enter the smart salons and win the security of government favor, and who carried a passionate hatred for the Old Regime.

¹³ The Estates of Languedoc had considerable autonomy under the Old Regime, while Provence retained a distinctive form of provincial administration under a different name. See Maurice Bordes (1972).

(Bordes 1972); liberals often took the Estates of Languedoc as a model for reform. Therefore, local struggles over one of the central national issues were reduced. It also appears that in the internal politics of the Estates, if there was any clear aristocratic dominance, it was by the powerful upper clergy. Both Third Estate and nobility may have felt too far from the levers of regional power. Languedocs politics, in short, were far from the polarized model of Brittany.

In Provence, the wave of administrative experimentation of the period Jean Egret (1954) has dubbed the "pre-Revolution" led to the attempt by fief-holding nobles to revive the Provincial Estates in its ancient form and to displace the very different structures of regional self-government that had been in force since the seventeenth century. This was essentially a proposal for domination of the province by the small group of fief holders, to the detriment not merely of the Third Estate, but of the numerous class of nobles who held no fiefs. Much tension in 1788 and 1789 in Provence took the form of intra-noble conflict. When the central government refused to permit the Provincial-Estates (from which the non-fief holders were excluded) the right to draft Provence's *cahiers* for the Estates-General but convoked the Three Estates by district as elsewhere in France, the groundwork had been laid for the numerous nobility without fiefs to make common cause with the Third Estate elites against the arrogance of their fellow nobles.

Rural disturbances in the Mediterranean South, moreover, had a unique character. Virtually all conceivable targets were attacked by peasant insurrectionists in this region of highly autonomous self-governing village communities (Markoff 1986, Table 1). If any area of France might have had a common fear of the popular classes that led nobility and bourgeoisie to unite against insurrection from below, it was this region. As early as March, at least in Provence, nobles and bourgeoisie formed an armed militia to maintain calm. The local *Parlement* was also calling for unity among the three orders (Egret 1954). I have suggested a political explanation of Mediterranean distinctiveness, but there is also an alternative economic one, which I present below.

Let us turn from state formation to economic development. The fourth column of Table 1 introduces land-use measures into the

multivariate discussion and the columns further to the right insert them into the full multivariate context. With increasing concentration on some marketable commodity, we see a clear and consistent positive relationship to the emergence of consensus and the reduction of elite division.¹⁴ As the deputies of the Third Estate and nobility assembled in the cities in the spring of 1789, the extent of common ground between them was quite different, depending on the productive structure of the surrounding countryside. We find elite homogeneity where grains fed the growing urban populations; where meat fed the towns, horses supported the military, and leather and animal fats had a variety of industrial uses; where forests were being depleted to support the construction demands of growing towns and the crown's unrealizable dream of building ships to defeat England on the seas; and where wines for export or local consumption supplied an often less dangerous drink than the available water supply (particularly in the swollen towns).

As long as there was a productive land use—productive in terms of the marketplace—we find the urban notables who dominated the assemblies of the Third Estate and those nobles who participated in the meetings of their order apt to have a lot in common. In the economically marginal zones, deeper divisions emerged. Thus, the proportion of wasteland is negatively associated with agreement.

Another approach is to examine the major geographic zones of the country: the relatively prosperous openfield agriculture of North and East; a highly commercialized production of olives and fruit along the Mediterranean coast; and a complex and sometimes desperate economy in the infertile mountains.¹⁵ In the multivariate analysis, I add Mediterranean South to the group of models as a binary variable (column 6), obtaining a positive coefficient. This supports the thesis that a productive hinterland favored

¹⁴ In a model not presented here, "proportion arable" has a similar positive coefficient, but it is necessary to omit "proportion wasteland," which I have consistently used in Table 1. Too many land-use variables at once raise unmanageable problems of collinearity.

¹⁵ As well as other zones too difficult to classify for our rough and ready purposes here (such as the plains to the south of the openfield country).

elite agreement. Because there may be special political reasons for the higher levels of elite consensus along the Mediterranean, this specific finding by itself may not be very convincing. However, alternate models show that if "openfield" is used instead of "Mediterranean South," we get a positive coefficient, and if we use "Mountain area," a negative one. In other words, every variation supports local rural productivity as a source of elite cohesion.¹⁶ In the peripheral parts of the kingdom, there seems to have been a Third Estate particularly committed to change in conflict with a particularly adamant nobility.

A burgeoning town appears a bad bet for elite homogeneity, but the prosperous rural regions were fertile soil for the growth of similar views. Because these effects are largely additive in character (introducing land-use variables does not drastically alter the coefficient for town size or vice versa), a good place to expect a relatively high level of agreement would be a fairly small town in a fairly prosperous countryside.

Was revolutionary politics, close to the time when the Third Estate, with its allies from the nobility and clergy, claimed evolutionary authority by constituting the National Assembly, developing two distinguishable local patterns? In those regions of France that could take advantage of the market, as well as in districts with long experience of central political rule, urban notables and nobles had much common ground. In politically peripheral (and often self-governing) areas or in regions less favorably located in relation to the market, however, by 1789 a much greater gap had emerged between the grievances and demands of the two rival parties. If this picture is accurate, it would not be surprising if the regional bases for the more radical versions of the revolutionary program would emerge away from the economic and political centers. And when we consider the consequences of town size, we see that the most explosive and polarized environment was a large town in an economically marginal and politically peripheral region.

This varies considerably from the standard view of Paris as the driving force of the revolution. But it is at least roughly congruent

with Lynn Hunt's (1984) imaginative attempt to map regional variations in political leanings during the 1790s and with Timothy Tackett's (1986) demonstration that the religious politics of the Western regions that exploded in counterrevolution were already unusually polarized at the onset of revolution.

We have considered regional variations in the institutional structures within which positions were forged in 1789. Let us, finally, consider the economic crisis. The seventh column of Table 2 shows that the two measures of the crisis (the level of wheat prices in 1789 and the increase in wheat prices over their minimum during the past half-dozen years) are predictors of elite cohesion. It appears that reflection on the current state and desirable future of France was more likely to lead to similar diagnoses and cures in the particularly hard-hit areas.

While much has been written about the relative significance of poor circumstances and of declining circumstances as triggers of social upheaval, in this instance both of these indicators of misery enter the regression equation in column 7. Moreover, it is difficult to read their relative significance from columns 7-10 because the relative size of the regression coefficients depends on what other variables are in the model. Furthermore, with an eye on the interplay of structures and circumstances, if we try to explain elite cohesion as a reaction to crisis, ignoring structural variation altogether, column 7 shows that we actually explain more of the variance than do urbanism and state-penetration variables alone (column 3). This does not repudiate the view of a deepening capitalism and a strengthening state as trends that dominated social conflict—we need to assimilate the land-use and geographic variables within the context of economic change. But it should caution us against ignoring the play of circumstance in our concern with enduring structures.

Where the economic crisis was more severe, then, the Third Estate and the nobility came together. Was this because a particularly intense local situation set their thinking about France's ills on similar tracks? Was it because local tensions encouraged one or both to seek the counsel of the other and perhaps even to self-consciously aim at a common position? Was this because fear of popular upheaval moderated the differences of the

¹⁶ Again, the threat of collinearity makes entering more than one of the "geographic region" groups at the same time as the land-use measures—quite obviously varying with region—unworkable.

Third Estate and nobility? We do not have enough evidence to say for sure.

It appears, however, that a low level of elite agreement in the spring *cahiers* tended to be followed by more extreme urban conflict in the months ahead. Several studies suggest a rough classification of the revolutionary events in the towns during the summer that followed. In many towns, a revolutionary committee was formed. In some it was short-lived, in others it displaced the existing municipal government, in still others various forms of power-sharing evolved, including a division of function between the old town council and the revolutionary committee or the creation of an enlarged single structure that contained members of both groups. Of those districts studied, I have classified 47 according to whether the principal town had no successful seizure of power, something resembling a complete triumph for a new revolutionary municipal governing body, or some form of power-sharing.¹⁷

Of 30 districts with either no municipal revolution in the major town or a limited power-sharing arrangement, the mean agreement score is .27. Of 17 districts where a revolutionary body completely displaced the old town government, the mean agreement is .19. The size of the difference is comparable to the larger differences found in the survey of bivariate associations in Table 1. The revolutionary seizure of power in the towns was occurring where the local nobility and Third Estate had diverged in their views in the spring. Where elites did not agree, urban popular upheaval followed.¹⁸ But was it the fear of such upheaval, perhaps augmented by economic disaster, that led the elites of the spring to take positions to avoid the turbu-

lence of the summer? Only the memoirs, official correspondence, and personal letters from participants in town affairs could reveal whether those towns that exploded in the summer had elites particularly sensitive to tensions in the spring.

TWO EXAMPLES

What did the districts with high agreement agree about? What did they disagree about? And in the most divided districts, what issues were divisive? Which, despite the general air of division, were not? A full explanation is beyond the intentions of this essay, but a quick look at two cases that differed greatly in their level of agreement is instructive.

The nobility and Third Estate of Vic (Mavidal and Lauren 1879, vol. 6, pp. 18-22) adopted documents as much in agreement as any that were not the results of a formal collaboration of the two orders. Indeed, the occasional identity of language shows that there had been an exchange of draft texts in some form. On critical issues of government finance, there is a quite close accord. The two assemblies agreed that taxation was to require the approval of the Estates-General; that that body was to be regularly convened at brief intervals; that a detailed account of the public debt and deficit were to be produced; that a detailed allocation of expenditures among governmental agencies was to be drawn up by the Estates-General; that regional administration throughout France should be in the hands of Provincial Estates, whose specific responsibilities were to include roads, bridges, and poverty; that these Provincial Estates were to be elected bodies to replace the *intendants*, the chief royal officers in the provinces; and that the current system of municipal officials was to be supplanted by elected "citizens" and subject to no distinction among the orders.

There is similarly high agreement on many matters affecting the regional economy (both assemblies, for example, decried the government's control of horse-breeding) and on individual liberties (both insisted that no one be arrested without a proper judicial order). Both favored permitting interest-bearing loans to improve the region's competitive position. Both opposed sending substantial sums to Rome; and both opposed the fees priests charged for performing many services, but

¹⁷ I followed the account in Daniel Ligou's (1960) survey of the municipal revolutions, supplemented by Lynn Hunt's (1976) study of France's 30 largest cities. The classifications can only be regarded as rough approximations due to the complexity of local patterns: in some towns committees were short-lived, in others an original revolutionary committee were succeeded by others of a different character, in yet others the borderline between "power sharing" and "complete revolution" is a difficult judgment call (if members of the old establishment are incorporated into a new structure as a weak minority).

¹⁸ There is, however, no relationship that I have been able to discover between elite agreement and insurrection in the countryside.

avored augmenting priestly salaries. Both insisted that Jews be permitted to lend to individuals only before a notary or two witnesses. In short, these *cahiers* bear a marked similarity to each another.

Yet there are also differences. When the nobles complained about the failure to carry out an earlier plan to drain the local marshes, the Third Estate added a condemnation of a particular duke. Although the nobles agreed with the Third that all were to pay taxes in proportion to their means, the Third tellingly added that all should appear on the same tax rolls (the separate noble tax roll, justified by claims of noble honor, complicated the administrator's task of collecting any money). The nobility politely called on the King to moderate the generosity of his heart in awarding so many pensions and favors; the Third wanted a list of pensions and justifications for favors to be turned over to elected bodies for study. The nobility wanted the state to sell off royal palaces as too expensive; the Third called for the sale of royal land, forests, and workshops. The nobility wanted the sale of judicial office abolished; the Third concurred but added that there were to be no distinctions of birth for positions in the clergy and military as well as the judiciary. The nobility wanted cheaper salt; so did the Third Estate, which wished to see this accomplished by abolishing the General Farms, the institution responsible for collection. If nobles and Third agreed on conserving wood by reducing the number of woodburning plants that processed salt, only the Third insisted that if anyone's wood must be used for such a purpose, let it be the King's. And on the structure of the Estates-General itself, the nobility held out for vote by order (under which each of the three estates had one vote, and, in some versions, a veto), while the Third demanded vote by head. Despite the moderation of the Third Estate of Vic (no outrage expressed about seigneurial rights, for example), and despite the many areas of agreement between the two sides, the Third here insisted on eliminating birth as a criterion of social mobility and opposed the nobility on the voting rules that would structure power in the Estates-General.

Mâcon in Burgundy (Mavidal and Laurent 1879, vol. 3, pp. 623-34) was the scene of great popular turbulence. Here, the nobility and the Third were in considerably less agreement than in Vic. They also differed on

the rules for the Estates-General, but in much more detail and with much greater intensity. The nobility wanted vote by order and separate meetings, whereas the Third wanted no deliberations at all unless the representation of the Third Estate equaled that of the two privileged orders and there was voting by head. The nobles of Mâcon proposed that noble and clerical deputies of other districts meet with them to prepare a renunciation of their material privileges. The Third Estate, perhaps aware of the nobles' proposal, announced that if the deputies of the privileged orders joined together or refused to participate with them, the Third Estate's deputies would function as a "national assembly," perhaps with cooperative deputies of the first two estates. The nobility wanted an Estates-General that met every five years, the Third wanted one that convened twice each year. The nobles were distressed by the unwieldy size of the Estates-General, feeling it inimical to the rational conduct of business; the Third insisted that a proper Estates-General needed at least 1,200 delegates.

They differed sharply in many other areas as well. The nobility insisted that seigneurial rights, like other forms of property, were to be protected; the Third Estate wanted to eliminate some seigneurial rights on proper indemnification, restrict certain vexing rights to water, and conduct a study of the seigneurial courts to decide whether they were to be abolished or reformed. The nobles showed a concern with civil liberties by insisting that an arrested person be seen by a judge within 24 hours, but the Third demanded that one be seen by a judge instantly.

Both nobility and Third Estate proposed military reforms. The nobility wanted the pay of soldiers and officers augmented; the Third agreed on soldiers but had nothing to say about their superiors. The nobility wanted an end to ministerial interference with the military; the Third wanted an end to caprice in military life, whether by ministers or corps commanders. Although the nobility referred circumspectly to blocked mobility in the military, the Third stated flatly that commoners were to be able to achieve all ecclesiastic, civil, and military positions. The nobility wished to see discipline improved and peacetime uses of the military developed, but the Third Estate called for soldiers to take an oath never to bear arms against citizens (unless specifically authorized by the Estates-

General) and demanded an end to offensive wars.

There was in Mâcon a great gap. Yet, there were common elements as well. Both complained about clerical wealth; the nobles, however, criticized the revenues of useless religious communities, whereas the Third was unhappy about the incomes of archbishops. While both proposed expanding social welfare measures, they aimed at different populations and proposed different ways to finance them.

These details suggest the fatal superficiality of words like "consensus" in the face of the actual messy expression of views. The Third and nobility of Vic agreed on many things but clashed over some central issues; the nobility and Third Estate of Mâcon were deeply divided, yet had some striking common elements.

A LIBERAL NOBILITY, A DOCILE THIRD ESTATE?

Was consensus shaped by two processes, one that liberalized the nobility and one that pacified the Third Estate? Could it be that only one of these processes was occurring? I stressed Tocqueville's thesis of a liberalized nobility in examining the consequences of expanding state authority. It hardly seems possible, however, to reduce the emergence of consensus to such global ideas as "liberalism" or "conservatism." The variety of forms of agreement and disagreement in Vic

and Mâcon belies such a reduction. I shall explore this issue by asking whether the circumstances that were found to nurture agreement fostered a liberal nobility, a tame Third Estate, or both. As a simple, global measure of dissatisfaction with the existing order, I use the proportion of demands in a *cahier* that ask that an institution be *abolished*. As a corresponding measure of acceptance of things as they are, I use the proportion of demands that an institution be *maintained*. As a measure of the intensity with which an assembly is asserting itself, I use the number of grievances. Table 5 presents regression analyses in which the predictors are those that explained half the variance in agreement (Table 2, column 10). Coefficients are shown whose *t*-value is near 2.

The table shows several things. The large towns were where the most demands were made by both nobility and Third Estate. The demands of the nobility of those towns tended to be conservative, perhaps accounting in part for the elite divisions in the cities. Administrative centralization, on the other hand, which also augmented the number of noble demands, seems to have been particularly consequential for dampening the conservative tendencies of the nobility. If areas with extensive wasteland are the less prosperous, regional poverty appears to dampen the making of demands. The effects of the catastrophic rise in prices seems more pronounced for the nobility than the Third. Table

Table 5. Regression of Noble and Third-Estate Tendencies on Predictors of Agreement (Standardized Regression Coefficients with *t*-value in Parentheses)

	Nobility			Third Estate		
	Number of Demands (Log)	Proportion Abolish	Proportion Maintain	Number of demands (Log)	Proportion Abolish	Proportion Maintain
Population of largest town (log)	.313(4.17)	—	.134(1.71)	.495(7.19)	—	—
Administrative centralization (= pays d'états vs. pays d'élections)	.189(2.52)	—	-.336(-3.94)	—	—	—
Proportion grassland	—	—	—	-.226(-3.30)	—	—
Proportion woodland	—	—	—	—	—	—
Proportion land planted in vines	—	—	-.164(-2.04)	—	—	—
Proportion wasteland	-.160(-2.16)	—	—	-.158(-2.29)	-.213(-2.71)	—
Mediterranean south	—	—	-.361(-3.56)	—	—	—
Increase in wheat price over minimum since 1784	—	.239(3.06)	-.389(-4.03)	—	—	—
R ²	.169	.057	.176	.290	.045	—

5 also suggests that economic disaster promoted consensus by dampening the nobles' propensity to hold fast to what was and by augmenting their propensity to propose its elimination. If the specter of popular insurrection did not lead the Third Estate to moderate its views, it may have spurred the nobles to liberalize theirs.

This table also suggests that the formation of common ground is by no means identical to such global tendencies, although they are clearly a part of the story. If the nobility and Third Estate tended to differ on the economic periphery, it surely is not because the Third Estate was more radical; the urban notables of the zones of extensive wasteland were actually less prone to demand the abolition of existing institutions. Most of the predictors of agreement have no effect on many of the measures of liberalism/conservatism; nor do those that have an effect explain very much of the variance.

CONCLUSION

Was the revolution essentially the dramatic climax of a process that nurtured a body of ideas, an ethos, and a social vision in a new elite that was becoming deeply estranged from the beneficiaries of the Old Regime? Were there two rival elites at the onset of revolution, the one dynamic, the other moribund, that can be identified more or less with the leadership of the Third Estate and the nobility? Or was the revolution essentially the outcome of a process that uniformly reshaped in a similar way the views of all? Did some powerful social process (e.g., the emergence of a modern state apparatus) generate agreement on the unacceptability of the current order and a common vision of a new one? Both positions appear misleading.

The data show, on the level of the elites, that there were both dissension-generating and consensus-forging mechanisms at work and that no single process dominated the formation of the social milieux within which the French chose their options in 1789. Tocqueville's thesis about the impact of central bureaucratic authority, for example, is confirmed by the data—but it is only one of the processes at work and explains only a portion of the variance. A prosperous and productive region under the thumb of the royal government is the most favorable milieu for a considerable degree of harmony between

the nobility and Third Estate (particularly in those of its districts not dominated by a large city). Yet, the example of Vic, which more or less fits these characteristics, shows important clashes even within such harmony.

Even before the great conflicts of the 1790s, the revolution was in many ways a different matter in the poorer and more autonomous regions—and in the great cities. There was a revolution of more or less agreed on reforms in some places, and there was a bitter struggle among rival claimants in others. Locally, the revolution had many different patterns of cooperation and conflict among the well-to-do.¹⁹

The data suggest something else. The most elaborate statistical model accounted for less than half the variance.²⁰ This may be attributable to limits in the technique of analysis: poor data, crudely conceived indicators of complex and subtle realities, a failure to structure the variables in their proper functional form, perhaps a less-than ideal choice of estimation technique, and so forth. But there may be an additional limitation. I tried to explain some aspects of the political positions taken by noble and Third Estate assemblies in the spring of 1789. The explanations took the form of identifying the local contexts: was an electoral district in a

¹⁹ A subject only now beginning to be systematically studied. See for example, Hunt (1978).

²⁰ The final equation presented in column 10 of Table 2 is not actually the equation that maximizes the variance explained. It was possible to construct equations with larger R^2 's, but they were not very robust. That is, random subsamples had radically different values for some of the coefficients. To assess the stability of equation 10, I successively deleted what appeared to be the most influential cases. More precisely, I took Cook's distance as a measure of the degree to which an individual electoral district was affecting the equation. I then deleted that *bailliage* with the largest Cook's D (.09 as it happens) and then recomputed the regression coefficients for the 168 remaining cases. Observing no change to speak of in the relative sizes and signs of the coefficients and a tendency to an increase in the t -values and the R^2 , I then determined the district with the largest Cook's D for the new equation and deleted that case. After deleting 10 districts in this fashion, the maximum Cook's D was quite small, .03. Comparing column 10 of Table 2 with the equation with the 10 influential districts deleted, there is little change in the coefficients, from which I conclude that the estimation is fairly robust.

commercialized area, was the economic crisis severe, was it in a partially self-governing province? But the French people were making new choices, and assemblies faced their own local versions of the crisis in different ways. Although our variables predicted a degree of harmony in Vic, for example, the privileged and commoners of Vic (to some extent deliberately, it would seem) forged a level of consensus beyond that. Perhaps we may see here some of the limits of structural theories of revolution. A knowledge of the local contexts in which the assemblies deliberated cannot explain fully the positions those assemblies took.

In focusing on local processes, I neglect the ways they fit into the national context and debate. Previous work has suggested something of the significance of that national debate and the ways in which the local discussions differed from, yet were affected by, the national scene (Markoff and Shapiro 1985). We have found that, locally, the Third and nobility tended to differ less than the national picture suggests. The level of agreement was higher, for example, for the nobility and Third Estate of the same *bailliage* than for those of distinct *baillies*. However, on the most frequently discussed issues, the local elites were less likely to arrive at a common position. The more nationally controversial an issue was, the less effective were the processes by which consensus was achieved locally. If the nobility moderated its stance on many issues in districts where economic disaster reigned, it seems likely that on some central issues that moderation was less forthcoming.²¹ (Consider the gap in Vic on the voting rules in the Estates-General.)

The data show us not a process, but processes; not one revolutionary model, but many levels of conflict. We have only studied the well-to-do. The data have hinted at something else of the greatest interest: There is no relation between the level of elite division and the occurrence of rural revolt, yet another sign of the autonomy of the peasants' actions that Georges Lefebvre proposed and that is an important element of Skocpol's recent interpretation of revolutionary politics (1979). The elite struggles at the

national level no doubt opened the way for rural insurrection, even as those struggles were augmented by the turbulence of the countryside. But whether the local urban Third-Estate leadership and the local nobility were divided or unified has no consequence at all for peasant action. The data again ask, but hardly answer, how the diversity of forms of action, of agreement and of hostility, and of the coming together of many processes can be understood as a whole.

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²¹ These observations draw on evidence about the issues on which local agreement was achieved (Markoff and Shapiro 1985).

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MISSION CONTROL? THE DEVELOPMENT OF PERSONNEL SYSTEMS IN U.S. INDUSTRY*

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This paper examines historical differences in personnel practices among U.S. industries to explore the roots of modern "bureaucratic" work control. We report multivariate analyses of data describing organizational personnel practices, collected by the National Industrial Conference Board between 1935 and 1946. We find evidence of three early strands of bureaucratic labor control in different industrial sectors: worker allocation and job-evaluation techniques, which evolved from scientific management in modern assembly-line industries; internal labor-market mechanisms in white-collar nonmanufacturing; and practices related to seniority and the formalization of rules in unionized and skilled industries. Our analyses suggest that the institutional environment and the historical period of an industry's founding were among the central contingencies shaping labor control in a particular sector, as were several factors that past research has emphasized more, such as technology and skills, labor market conditions, and unionization. Our analyses thus corroborate some previous accounts of industrial differences in "bureaucratic control," while also suggesting some revisions concerning where, when, and why employment relations first became bureaucratized.

INTRODUCTION

With the onset of industrialization, the scale of employment in workplaces grew dramatically. Marx and Engels ([1848] 1968, pp. 69-70) vividly characterized the organization of early factories:

Modern industry has converted the little workshop of the patriarchal master into the great factory of the industrial capitalist. Masses of labourers, crowded into the factory, are organized like soldiers. As privates of the industrial army they are placed under the command of a perfect hierarchy of officers and sergeants.

In practice, however, hierarchical command was far from perfect in most firms, and

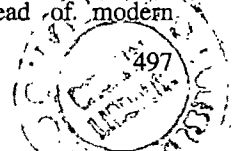
controlling workers became a central problem for the "officers and sergeants" of industry. Early factories depended on close and sometimes harsh supervision and on threats of layoffs to control workers. By World War I, this system had proved costly and unmanageable. New regimes of workplace control emerged that rationalized the production process (through scientific management and kindred practices) and/or the employment relation (through internal labor markets and kindred arrangements) (Burawoy 1979; Edwards 1979; Gordon, Edwards, and Reich 1982; Jacoby 1985). Different industries adopted these innovations to varying degrees, but by the end of World War II, they were widespread among large core-sector firms (see Baron, Dobbin, and Jennings 1986).

What organizational practices comprised these modern systems of workplace control? When and why did they appear in certain industries? This paper examines some descriptive evidence concerning these questions. We analyze industry-level data on the prevalence of various employment practices in the U.S. economy in the 1930s and '40s, concentrating on the roots and the spread of modern

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"bureaucratic controls"—including internal labor market arrangements.

Our data focus on changes in employment practices between the early years of the New Deal and the end of World War II, a critical period of transformation in U.S. industry and labor relations (Hawley 1960; Bernstein 1970). To be sure, large organizations had already made substantial progress in bureaucratizing and rationalizing employment before the New Deal, particularly in the government, military, and educational sectors (e.g., Tolbert and Zucker 1983; DiPrete, forthcoming, chap. 5).¹ In certain respects, our findings capture the spread of these practices to other sectors; for instance, our results point to the early adoption of key bureaucratic controls over white-collar employment in nonmanufacturing organizations, reflecting the diffusion of early governmental reforms (civil service rules, employment testing, etc.) to private white-collar bureaucracies. Our analyses suggest that three rather distinct forms of workplace control in evidence by the mid-1930s later coalesced and diffused to produce modern-day "bureaucratic control." First, centralized personnel functions, formal job analysis, and employment record-keeping extended the scientific management principle of rationalizing production to the workforce in assembly-line industries. Second, seniority provisions and formal rule systems flourished in industries characterized by union strife, continuous processing technology, and/or public-sector ties (e.g., utilities and petroleum). Third, internal labor market systems, combining centralized personnel functions with the formalization of jobs, salaries, and promotions, appeared in industries relying extensively on white-collar personnel (e.g., banking and insurance). The roots of modern bureaucratic control thus appear to be more complex and diverse than prior analysts have implied (e.g., Edwards 1979). The concluding section highlights the importance of technology and skills, industry founding period, unionization, and the institutional environment in determining which control mechanisms various industries adopted.

¹ These sectors were not a key focus of the personnel surveys we analyze (described below), which may therefore understate the prevalence of modern bureaucratic models for employment relations during this period.

WORK CONTROL IN HISTORICAL CONTEXT

Recent studies of the labor process have identified three main systems of workplace control, often tracing their roots to particular historical periods. We begin by describing these three ideal-types of workplace control and how their elements are operationalized for this study. We then briefly review debates about the development and diffusion of the modern bureaucratic form of control.

Historically, worker control was primarily the task of foremen, who contracted for and oversaw labor. Under traditional or "simple" labor control, foremen and managers determined wages, hiring, work conditions, and firing (Edwards 1979, p. 19). They used physical force and verbal abuse, threats of unemployment or wage reductions, and personal obligations and favoritism to control workers. Work behavior and performance were personally monitored by the foreman, rather than by machine-pacing, scientific analyses of work, or bureaucratic rules and procedures. Slichter called this the "drive system" of labor control, the "dominating note of [which] is to inspire the worker with awe and fear of the management, and having developed fear among them, to take advantage of it" (1919, p. 202). For our purposes, we operationalize reliance on simple control within an industry by the *absence* of personnel practices that sought to rationalize employment relations (e.g., personnel rule books; rating and testing systems; centralized personnel offices responsible for hiring, firing, and promotion) and of scientific management techniques that sought to rationalize production (e.g., time and motion studies).

Scientific-management practices pioneered in the late 1800s by Frederick Taylor and others were used in new assembly-line industries after the turn of the century to rationalize production processes and coordinate complex manufacturing flows. New mechanized production processes vested labor control in technology; "machinery itself (now) directed the labor process and set the pace" (Edwards 1979, p. 20). The mainstream literature on technology notes the consequences of the shift from craft production to mechanization: "machine technology generally reduces the control of the employee over his work process . . . [because] decisions have been incorporated into the ma-

chine's very design and functioning . . . [Operatives] simply respond to the rhythms and exigencies of the technical system instead of initiating activity and exerting control" (Blauner 1964, p. 170). Foremen were thereby relieved of the task of constant supervision, since supervision was built into the production technology. The scientific-management movement advocated various personnel practices as adjuncts to machine pacing to rationalize production and engineer the worker-machine interface, including time and motion studies of work, work-simplification programs, job analysis, and systematic records of employment and turnover. We operationalize reliance on scientific management by the prevalence of these personnel practices in each industry. Unfortunately, we lack specific data on the extent of machine pacing of work which, according to Edwards (1979), was the linchpin of "technical control."

Bureaucratic personnel practices sought to rationalize employment procedures as scientific management had sought to rationalize production procedures. These new policies aimed to find the "right person for the job" through testing and evaluation and to discourage costly turnover by offering stable employment and promotion opportunities. Bureaucratic employment techniques also controlled workers, inducing them to comply with commands by offering the carrot of steady employment and promotions. Sumner Slichter argued that "the fear of unemployment is one of the greatest fears the average workman has and he is slow to leave a shop in which he feels assured of steady work" (1919, p. 269). Likewise, job ladders provided incentives for workers to remain with the firm and to perform well: "when many small gradations in status exist, the employee can more often experience the illusion of 'being somebody' and of ascending the scale" (Mills 1956, p. 211). Firms subjected the employment relation to bureaucratic control through the "elaboration of job titles, rules, procedures, rights, and responsibilities" (Edwards 1979, p. 145), including tests for hiring and promotion; scheduled performance ratings; incentives for long-term employment, such as seniority provisions and systematic promotion schemes; and the introduction or extension of personnel departments that took hiring, firing, and promotion out of foremen's hands. Job classification and job-bidding systems were

also elements of the emerging bureaucratic control system (Burawoy 1979, chap. 6), as were the development of formalized layoff procedures, codified rule books, and the introduction (or extension) of job analysis and evaluation. We use the prevalence of these personnel practices in each industry to indicate the extent of "bureaucratic" control over employment relations there.

Recent studies of the labor process have fueled debates about when, where, and why employment became rationalized and bureaucratized. Various theorists have stressed the efficiencies associated with bureaucratic rules and procedures, particularly the internal labor market (ILM). Doeringer and Piore (1971), for instance, trace ILMs to management's need to retain skilled workers in an economy that has become increasingly sophisticated technologically. Similarly, some attribute the spread of bureaucratic arrangements in organizations to the rationalization and increasing scale of economic activity (e.g., Weber [1922] 1947; Bendix 1956).

In contrast, neo-Marxists (Stone 1974; Marglin 1974; Edwards 1979; Gordon et al. 1982) argue that both scientific-management and bureaucratic personnel practices developed because they enabled owners and managers to control and coopt workers more completely and less visibly. According to these authors, scientific management and other "technical" controls, which extended the logic of the assembly line to work routines and employment policies, were adopted in modernizing mass-production industries in the first three decades of this century. Violent union opposition in the 1930s then prompted capitalists to create less obtrusive controls. Consequently, beginning in the 1950s, a new regime of bureaucratic control was consolidated in large "core" manufacturing concerns, after many years of casual exploration with modern personnel reforms. This new system involved formalized personnel rules and procedures designed to limit the power of organized labor in the unionized sector and to forestall unionization elsewhere:

In retrospect, the speed and comprehensiveness of unions' postwar accommodation with management in the new system of labor management appear quite remarkable. . . . [M]any union leaders may not have appreciated the significance of their ceding so much managerial authority over the organization of work. By the

early 1950s, large corporations had succeeded in shaping and applying an essentially new structure of labor management. Nonunion employers in both manufacturing and nonmanufacturing industries followed similar patterns, led by the coherence of management theory and the similarity of production work in many blue-collar and white-collar settings (Gordon et al. 1982, pp. 188–89).

Jacoby (1985) challenged this neo-Marxian view. Focusing on developments in manufacturing, he demonstrates the existence of ILMs as early as 1900 and argues that there were two periods of rapid diffusion for modern bureaucratic controls: World War I and immediately following passage of the Wagner Act (in 1935). According to Jacoby, in the wake of the Wagner Act, labor was able to pressure managements to adopt personnel practices that benefited union members by limiting managerial discretion and ensuring greater voice, equity, employment, security, and promotion chances. These practices included seniority provisions, job-evaluation systems, pension plans, grievance procedures, and formalized compensation practices. Jacoby concludes that unions were key forces behind modern personnel reforms, rather than unwitting victims of them (also see Kahn 1976; Rubery 1978).

Others trace the spread of modern organizational forms, including bureaucratic employment systems, to normative and coercive forces that have favored their institutionalization. Meyer and Rowan (1977) and DiMaggio and Powell (1983) suggest that the professionalization of management and state involvement in economic affairs are two key forces favoring the diffusion of modern bureaucratic organizational forms. Institutionalization approaches also claim that the bureaucratic form has become increasingly legitimated over time, particularly in sectors where organizations must be judged on the basis of their *procedures* because their outputs are difficult to measure or evaluate (e.g., schools). Since organizational arrangements are often inert (Stinchcombe 1965; Hannan and Freeman 1984), these innovations in workplace control should be less prevalent among firms in older industries, even those whose specific characteristics otherwise make them likely candidates for adoption (e.g., large tobacco firms). Conversely, this view implies that modern personnel innovations should be most prevalent in newer industries and in those where

outputs are difficult for constituents to evaluate, even within enterprises lacking the specific characteristics (such as large size or firm-specific skills) that ostensibly make such innovations “efficient.” Meyer and Brown (1977), Tolbert and Zucker (1983), and Baron et al. (1986) have presented empirical evidence consistent with these predictions.

These different theoretical perspectives offer rather disparate accounts of when, where, and why organizations rationalized and bureaucratized employment matters. Below, we examine how personnel practices varied across industries historically to identify the different facets of workplace control present in the U.S. economy between 1935 and 1946. Our principal aim is to sketch a more representative portrait than previous studies of how the employment relationship was administered in different parts of the economy. Then, we discuss causes of industry differences in workplace control systems, noting where the evidence corroborates or contradicts the different theoretical perspectives reviewed above.

DATA AND METHODS

The Sample

To describe the configuration of personnel practices, we analyze data gathered by the National Industrial Conference Board (NICB) in 1935, 1939, and 1946 surveys (NICB 1936, 1940, 1947). NICB publications based on these surveys tabulated specific personnel practices by industry. The NICB attempted to survey the entire population of work organizations in all industries using New York Stock Exchange listings, Dun and Bradstreet publications, and other firm registers as sampling frames. The 1935 sample included 2,452 firms that employed 4.5 million workers, 15.5 percent of the national labor force in these industry classifications at the time (NICB 1936, p. 5). The 1939 survey covered 2,700 firms with 5 million employees, and the 1946 survey covered 3,498 firms with an unspecified number of workers. The industries studied in 1935, 1939, and 1946 are listed in Tables 2, 4, and 6, respectively.²

² We eliminated one or two ambiguous industrial categories in which the NICB samples contained a very small number of cases.

The NICB apparently achieved considerable continuity and comparability in their surveys (see Baron et al. 1986). The mix of industries remained fairly constant in the surveys, although some new industries (e.g., aircraft, shipbuilding) were added in 1946, which reflected wartime expansion. Larger firms clearly dominated the NICB sample, but a sizable group of smaller enterprises was also included: 33 percent of the firms studied in 1935 had fewer than 250 employees, as did 32 percent and 25 percent in 1939 and 1946, respectively. The NICB targeted many of its own member organizations as survey respondents; therefore, the same organizations often participated in the various surveys over the years. Thus, the NICB studies provide data for a relatively stable group of firms over time.

Our industry-level analyses of labor-control regimes no doubt obscure some important firm-level differences in personnel practice (see Denk 1988). Moreover, the reported usage of personnel practices by firms in the NICB surveys may not reflect the actual working conditions, advancement opportunities, or employment security that workers *experienced* in particular sectors. Nor is it likely that all workers in a firm were affected equally by these personnel innovations.

It is also difficult to determine the exact representativeness of these data, since population-level statistics on firms by industry are scarce during this period. Other surveys of personnel practices conducted during this era generally report more widespread use of many relevant practices, such as time and motion studies (Peirce School 1935; Parks 1936). However, they typically sampled larger firms, fewer industries, and fewer time points than the NICB. One historian of this period has called the NICB data "excellent in every respect" (Brandes 1976, p. 193), and several authors have recently relied on them to chart trends in the employment relationship during this century (Kochan and Cappelli 1984; Jacoby 1985).³

³ Form (1987, p. 40) suggests that scientific management, including time and motion studies, was less widespread than some scholars have claimed. In our sample, 31 percent of manufacturing firms employed time and motion studies in 1935, and 51 percent reported "time studies" in 1946 (NICB 1936, p. 62; NICB 1947, p. 29). If these percentages overstate the true prevalence of such techniques,

Methods of Analysis

To identify labor-control systems and examine how they varied across industries and over time, we use principal-components factor analysis to examine patterns of covariation among personnel practices. Control systems are defined operationally by clusters of personnel practices that tended to co-occur in each period. Industries are then classified (i.e., assigned factor scores) according to the extent to which they relied on the employment procedures that define each dimension. Thus, we use factor analyses simply as a descriptive shorthand for grouping kindred personnel practices and for differentiating industries by their workplace controls.

We included in our analysis those personnel practices that previous researchers have identified as integral to scientific management and the rationalization of employment relations (see "Work Control in Historical Context" above). The specific items available in the NICB surveys varied somewhat across years; Tables 1, 3, and 5 list the personnel activities analyzed for 1935, 1939, and 1946, respectively.⁴ For each personnel practice, the NICB surveys reported the percentage of firms in each industry using it. We analyzed covariances rather than correlations among these percentages for two reasons: all measures are in the same percentage metric; and in identifying control regimes and differentiating industries, we wished to give greatest weight to those personnel practices that varied most in their rates of use across industries.⁵ We relied on principal-components

this illustrates the potential biases associated with the NICB surveys, which no doubt focused disproportionately on larger corporations employing "state-of-the-art" personnel practices. On the other hand, as we have indicated, such biases are more severe in other surveys from this period.

⁴ We also conducted supplemental factor analyses for 1935, 1939, and 1946, based on a subset of industries and practices that were roughly comparable across the three surveys. Nineteen industries and eight personnel practices were studied, including time and motion studies, centralized employment, centralized personnel department, rating systems, job evaluation, job analysis, and employment testing. Principal component analyses on this subset of industries and practices yielded results similar to those reported below for the full set of practices and industries.

⁵ When factoring a covariance matrix, one could define a loading as the weight of each variable on

Table 1. Principal-components Analysis of Industrial Personnel Practices, 1935: Factor Loadings after Varimax Rotation

Personnel Practice	All Industries (N=24) ^a			Manufacturing (N=19) ^a		
	Factor			Factor		
	(1)	(2)	(3)	(1)	(2)	(3)
Centralized discharge	.88	.36	-.10	.94	.24	.05
Centralized transfer	.90	.38	.06	.93	.30	.09
Centralized employment	.88	.43	.00	.90	.34	.14
Personnel department	.83	.31	.41	.73	.39	.52
Rating system	.92	.10	.16	.69	-.04	.65
Salary classification	.80	-.08	.36	.22	-.10	.93
Employment tests	.78	-.11	.26	.42	.20	.46
Job analysis	.75	.46	.08	.70	.34	.57
Systematized promotion	.66	-.17	.59	-.05	.42	.49
Job specifications	.69	.49	.14	.67	.15	.66
Length-of-service bonuses	.23	.00	.01	.11	.14	-.04
Time and motion study	.05	.73	-.63	.97	-.16	-.04
Layoff procedure	-.06	.92	.01	.70	.49	.45
Employment records	.53	.70	.41	.73	.46	.43
Turnover records	.54	.70	-.08	.77	.46	.18
Rule book	.28	.20	.92	.29	.91	.19
Maximum hiring age	.02	-.05	.75	-.02	.01	.11
<i>Eigenvalue</i>						
Before rotation	1729.59	679.80	276.29	1454.35	226.86	112.60
After rotation	1354.89	675.67	655.13	1218.03	306.23	269.55
<i>Variance explained</i>						
Before rotation	56.89%	22.34%	9.09%	73.89%	11.53%	5.72%
After rotation	44.57%	22.22%	21.55%	61.88%	15.56%	13.69%

^a See Table 2 for a listing of the industry categories included in the analyses.

analysis because it imposes less rigid statistical assumptions on the data than other techniques (Kim and Mueller 1978), although analyses using other factor-analytic and non-parametric techniques yielded similar results (details available from authors on request). Given the nature of these historical data and the small number of industries relative to personnel practices analyzed, these factor analyses are intended merely to be suggestive, and, accordingly, we supplement these results with other historical material in portraying how the employment relation evolved during this period.

RESULTS

1935

Table 1 reports loadings for three principal

the factor, so that the sum of the squared loadings equals the eigenvalue for that factor (Green 1976, pp. 274-75). However, we employ the more conventional definition of loadings, dividing each weight by the standard deviation of the corresponding observable to obtain correlations between personnel practices and factors.

components (after orthogonal rotation) extracted from the 1935 covariance matrix of personnel practices.⁶ The table reports one factor analysis for all industries and another for manufacturing industries only. The industry categories used are listed in Table 2, which shows the factor scores derived from Table 1.

Factor (1) for all industries shows that a number of bureaucratic personnel practices clustered together as early as 1935, including centralized employment, transfer, and discharge; job classification, specification, and evaluation; rating and testing systems; systematic promotion ladders; the keeping of detailed personnel records; and the use of personnel departments. These activities were all associated with the rationalization of employment and the development of ILMs. These practices prevailed most in the banking, insurance, and trade enterprises studied

⁶ In all three survey years, principal components after the third one invariably were harder to interpret and much weaker statistically. Oblique rotations did not appreciably alter the pattern of results reported here.

Table 2. Factor Scores for Industries, 1935

Industries	All Industries Factor			Manufacturing Factor		
	(1)	(2)	(3)	(1)	(2)	(3)
<i>A. Manufacturing</i>						
Agricultural implements	-.04	1.40	-.15	.96	1.21	-.83
Automobiles and parts	.57	1.97	-.40	1.71	.88	.06
Chemicals	.03	-.35	-.28	-.10	.21	-.13
Clothing	-.00	.17	-1.04	.56	-.81	-.23
Electrical mfg.	.44	1.42	-.57	1.32	-.14	.77
Food products	-.26	-.07	-.35	-.11	.15	-.23
Iron and steel	-.43	.46	-.11	-.05	1.15	-.71
Leather	-.91	-.49	-.57	-.64	-.88	-.17
Lumber	-.78	-1.48	-.80	-.94	-1.12	-.85
Machines and tools	-.39	.41	-.57	.35	-.64	-.14
Other metal products	-.28	-.22	-.79	.13	-.76	-.47
Mining	-1.11	.02	1.01	-1.27	2.75	-1.21
Paper	-.01	-.23	-.26	-.19	.15	.36
Petroleum	-.12	.06	1.05	-1.23	.86	3.50
Printing and publishing	-.79	-1.27	-.35	-1.27	-.60	.14
Rubber	.57	2.36	-.60	2.02	-.07	.93
Stone, clay, and glass	-.85	-1.38	-.44	-1.34	-.60	-.06
Textiles	-.40	-.26	-.87	.00	-.68	-.57
Miscellaneous mfg.	-.13	-.49	-.92	.08	-1.07	-.16
<i>B. Nonmanufacturing</i>						
Banking	2.21	-.87	.26			
Insurance	2.99	-1.26	.52			
Gas and electricity	-.06	.25	2.45			
Transportation and communication	-1.47	.28	2.73			
Wholesale and retail trade	1.23	-.44	1.02			

by the NICB (see factor [1] in Table 2).⁷ In manufacturing, only the automobile, electrical manufacturing, and rubber industries score positively on this dimension. Some accounts of the origins of bureaucratic control claim that nonmanufacturing companies followed the trend of manufacturing innovators in personnel reform (e.g., Edwards 1979, p. 131). The fact that banking, insurance, and trade enterprises availed themselves of these personnel practices more than other industries in 1935 is intriguing, since it implies that these personnel innovations diffused more rapidly in the nonmanufacturing sector. We return to this point below.

The practices clustering on factor (2) for all

industries include core scientific-management techniques (time and motion studies) and several kindred personnel practices—such as employment and turnover records and formal layoff procedures—that assisted in rationalizing production processes. These practices were most common in rubber, automobiles, electrical manufacturing, and agricultural implements, and least prevalent in craft or process manufacturing and in nonmanufacturing (except utilities). Like time and motion studies, employment and turnover records were part and parcel of management efforts to routinize and systematize production in the former industries, since these practices extended the logic of “inventory control” to workers. Firms using them relied extensively on formal layoff procedures for similar reasons: production was often seasonal and layoff procedures aided management in production scheduling (Jacoby 1985). Moreover, industrial unionism, which championed formalized layoff procedures, had proceeded furthest in these industries by 1935.

The third factor for all industries is a bit more ambiguous (and weaker statistically).

⁷ The NICB samples apparently included a disproportionate number of large trade establishments. Consequently, this industrial sector may appear more bureaucratized than was the case in the majority of smaller trade companies. Nonetheless, Carter and Carter (1985) have documented the prevalence of ILM arrangements in retailing before the Depression, even in trade enterprises with fewer employees than the average of those surveyed by the NICB.

This dimension of labor control is defined primarily by the use of rule books and maximum hiring ages. (In results restricted to manufacturing, factor [2] is quite similar, although it is dominated almost entirely by the rule book variable.) Rule books were used during this period to codify company employment policies. They were usually written either to handle union demands for formalized agreements or to forestall employee criticism about the absence of recognized procedures, sometimes in conjunction with the creation of a company union that followed guidelines offered in the rule book (Wolman 1936, p. 229). This was particularly true in mining, which was highly unionized by 1935 and which loads positively on the factor (Table 2, column 3).

The use of maximum hiring ages, which was widespread in utilities and particularly in transportation and communication, has been traced to a slightly different source: the use of pension plans to attract skilled workers needed in these industries. Age cutoffs in hiring were developed to limit the number of workers who would actually become eligible for pensions in these industries (Bernstein 1960, p. 57). Pensions and age cutoffs in hiring, combined with rationalization and deskilling of work, made it more difficult for older workers to find new skilled jobs, encouraging long-term employment and making workers increasingly concerned with securing seniority provisions. The practices defining factor (3) anticipate the emergence of union-based seniority systems and work rules in employment that flourished after passage of the Wagner Act (Jacoby 1985).

Analyses limited to manufacturing reveal that in 1935, employers were already experimenting with some bureaucratic controls as adjuncts to scientific management in modern mass-production industries (Table 1, factor [1] for manufacturing). Centralized employment, personnel departments, job analysis and evaluation, and rating systems were used in conjunction with efforts to control workers through the rationalization of production processes in rubber, auto, electrical manufacturing, and (to a lesser extent) agricultural implements companies (see Table 2). Petroleum, in contrast to these industries, did not use time and motion studies extensively but *did* bureaucratize the employment relationship early on, relying on salary and job classification, promotion ladders, rating

systems, and the like (see factor [3] for manufacturing). Compared to auto, rubber, and electrical manufacturing firms, petroleum companies thus appear to have relied more on ILM mechanisms (salary classification and systematized promotion). This pattern is consistent with propositions about the links between technology, bureaucratization, and labor control posited by Blauner (1964, chap. 6) and others, who argue that decentralized, capital-intensive, continuous-process production in such industries as oil and gas favors greater job security, promotion from within, and decentralization of employment matters. Moreover, as Blauner noted, these process industries are also younger and relied on larger proportions of white-collar personnel, factors that presumably favored greater adoption of new bureaucratic employment innovations (cf. Stinchcombe 1965), while their nonroutine and highly interdependent technologies limited the implementation of scientific management.

Several industries exhibit relatively low scores on all three dimensions of work control (see factors [1]–[3] for all industries in Table 1). These industries tend to be of two types: those that relied on craft traditions and often had AFL unions, such as printing and publishing and leather; and those that relied on a great deal of unskilled labor, such as food products,⁸ textiles, lumber, and miscellaneous manufacturing. In the former group, strong AFL unions resisted the imposition of scientific management and bureaucratic controls, viewing them as managerial attempts to encroach on craftworker discretion (see Bernstein 1970; Stone 1974; Edwards 1979). In contrast, the latter group of industries, which score low on all three factors, seemed to rely on employer paternalism or simple control techniques. These industries also display vestiges of “welfare work” reforms, which various authors have identified as early

⁸ Notwithstanding Edwards' (1979) description of meat slaughtering as an archetype of “technical control,” the food products industry does not exhibit a particularly high score on factors denoting reliance on scientific-management techniques (see Tables 2, 4, and 6). Chandler (1977, pp. 256, 293, 295) describes how many large food-products corporations had implemented continuous-process technologies early in their histories, prior to the scientific management movement, which may explain our results.

Table 3. Principal-components Analysis of Industrial Personnel Practices, 1939: Factor Loadings after Varimax Rotation

Personnel Practice	All Industries (N=25) ^a			Manufacturing (N=19) ^a		
	Factor			Factor		
	(1)	(2)	(3)	(1)	(2)	(3)
All-salaried workforce	.79	-.45	-.36	-.55	.27	.05
Performance evaluations ^b	.94	-.27	-.12	.11	.87	.36
Full-time personnel director	.89	-.12	.35	.29	.79	.43
Centralized employment	.93	.10	.15	.37	.55	.70
Tests: employment/promotion ^c	.75	-.39	-.12	.23	.20	.55
Information to employees: company organization and operations	.66	-.39	.42	.02	.78	.36
Job evaluation	.78	.02	.09	.30	.65	.25
Length-of-service bonuses	.62	.26	.16	.54	.45	.05
Time studies	-.02	.96	.20	.97	.06	.23
Rule book	.42	-.72	.28	-.24	.52	.21
Motion studies	.15	.88	.25	.83	.15	.44
Employment stabilization plan	-.16	.65	.29	.55	.32	.11
Seniority provisions	.53	.23	.61	.32	.85	-.39
Community wage surveys	.37	.22	.70	.20	.81	.30
Information to employees: industrial relations policies	.24	.06	.72	.02	.86	.38
Job rates set by general comparison	.04	.24	.59	.01	.75	-.00
Standardized job descriptions	.53	.23	.61	.50	.69	.19
<i>Eigenvalue</i>						
Before rotation	1643.53	747.58	557.28	933.98	416.71	152.79
After rotation	1262.47	995.41	690.52	641.03	638.42	224.03
<i>Variance explained</i>						
Before rotation	48.70%	22.15%	16.51%	54.47%	24.31%	8.91%
After rotation	37.41%	29.50%	20.46%	37.39%	37.23%	13.07%

^a See Table 4 for a listing of the industry categories included in the analyses.

^b The maximum of: percentage of firms in the industry using evaluations for hourly workers; and percentage using evaluations for salaried workers.

^c The maximum of: percentage of firms in the industry with employment or promotion tests for clerical ability; mechanical ability; sales ability; or general characteristics.

attempts at social control by employers in traditional sectors, especially "geographically isolated industries like mining, lumbering and textiles" (Jacoby 1985, p. 54; also see Edwards 1979, ch. 6).

1939

Tables 3 and 4 reveal continuity between 1935 and 1939 in systems of work control. Factor (1) for all industries still clusters personnel practices aimed primarily at instituting ILMs and rationalizing employment relations, and factor (2) groups practices associated with the rationalization of production (particularly scientific-management techniques). Sectors using bureaucratic controls and eschewing scientific management—non-manufacturing industries and petroleum—are still distinguished from manufacturing industries that primarily used time and motion

studies and kindred personnel practices (e.g., clothing, textiles, leather, and agricultural implements) and from the younger, mass-production industries that blended the two regimes (autos, rubber, and electrical manufacturing).

The results do, however, reflect one major change between 1935 and 1939: the increased development and diffusion of seniority-related provisions, stimulated by the Wagner Act (1935) and the boost it gave to union organizing efforts. The increasing importance of these provisions and collective bargaining is shown by factor (3) for all industries and factor (2) within manufacturing.⁹ These

⁹ A weak third factor among manufacturing industries essentially distinguishes agricultural implements from rubber production (see Tables 3 and 4). The former relied extensively on seniority provisions, but not on many of the other

Table 4. Factor Scores for Industries, 1939

Industry	All Industries Factor			Manufacturing Factor		
	(1)	(2)	(3)	(1)	(2)	(3)
<i>A. Manufacturing</i>						
Agricultural implements	-.74	.56	.51	1.38	.14	-2.67
Automobiles, aircraft, parts	.85	1.18	1.77	1.19	1.52	.55
Chemicals	-.14	.09	-.13	-.80	.14	.94
Clothing	-.23	1.26	-.93	.81	-1.29	.67
Electrical equipment	.76	1.48	1.24	1.33	.99	.65
Food products	-.59	-.38	.08	-.72	.30	-.51
Iron and steel	-.40	.24	.00	-.09	.05	-.35
Leather	-.78	.64	-1.00	.30	-1.17	-.54
Lumber	-1.05	-.16	-.61	-.47	-.53	-1.01
Machines and tools	-.10	.72	-.27	.08	-.32	.75
Other metal products	.07	1.05	.01	.61	-.18	.62
Mining	-1.30	-.87	-1.43	-1.64	-1.32	.24
Paper	-.14	.07	.04	-.80	.28	.91
Petroleum	-.02	-1.16	1.91	-1.82	2.76	-.37
Printing and publishing	-.58	-.16	-1.04	-.99	-.78	.55
Rubber	.83	1.73	1.00	1.47	.60	1.24
Stone, clay, and glass	-1.09	-.43	-.17	-.49	-.05	-1.63
Textiles	-.32	.74	-.67	.03	-.70	.56
Miscellaneous mfg.	-.46	.60	-.15	.59	-.33	-.76
<i>B. Nonmanufacturing</i>						
Banking	2.33	-.80	-1.31			
Insurance	2.66	-.96	-1.27			
Gas and electricity	.55	-1.36	1.55			
Transportation and communication	-.99	-2.22	1.58			
Wholesale and retail trade	1.29	-.97	-.34			
Miscellaneous nonmanufacturing	-.41	-.89	-.39			

factors are defined primarily by the prevalence of seniority agreements, community wage surveys, and provision of information to employees about industrial relations policies. All of these practices were advocated by unions or negotiated under their influence. During this period, organized labor was keenly interested in systematizing rewards within and among firms on the basis of tenure and explicit job comparisons (Fine 1969; Bernstein 1970). By 1939, firms in agricul-

tural implements, autos and aircraft, electrical manufacturing, and rubber were most likely to employ these union-based practices. These are the manufacturing settings in which industrial unions also made the greatest gains after 1935, fueled largely by worker resistance to employers' earlier experiments with scientific management and technical control (Baron et al. 1986, Table 4).

Modern unionized nonmanufacturing industries (gas and electricity, transportation and communication) also used these seniority-related bureaucratic practices extensively, as shown by their high scores on factor (3) in Table 4. Firms in those industries may have been subject not only to direct union pressure, but also to public-sector regulations that reflected labor demands, encouraging the rationalization of employment practices. However, these new seniority-related practices apparently did not spread quickly to more traditional craft industries, such as printing and publishing, leather, and glass, where craft tradition persisted as an alternative

bureaucratic practices that typically accompanied seniority arrangements. Although the average agricultural-implements firm in our sample was more than twice the size of the average rubber company, the legacy of "welfare work" by International Harvester and its competitors may have rendered formal bureaucratic arrangements less necessary to accomplish the same objectives than in industries without this tradition (Ozanne 1967). In contrast, rubber companies, which relied extensively on scientific management and various bureaucratic labor controls, apparently routinized and rationalized tasks to the point that workers were fairly interchangeable, since firms placed less emphasis on seniority.

Table 5. Principal-components Analysis of Industrial Personnel Practices, 1946: Factor Loadings after Varimax Rotation

Personnel Practice	All Industries (N=29) ^a			Manufacturing (N=21) ^a		
	(1)	(2)	(3)	(1)	(2)	(3)
Personnel section: wage and salary administration	.91	.28	-.04	.91	.28	.23
Personnel section: benefits	.91	.02	.15	.91	.11	-.03
Personnel section: training	.89	.05	.23	.85	.16	.41
Personnel section: employment	.74	.51	.24	.74	.38	.45
Employee handbook	.94	.06	.04	.91	.22	.13
Rating plan ^b	.69	.32	-.42	.74	.31	.16
Policy and procedure manual	.85	-.12	-.15	.90	.14	-.20
Employment tests	.73	-.19	-.03	.78	.22	-.33
Exit interviews	.69	.32	-.42	.66	.54	.30
Personnel section: personnel research	.89	-.02	-.09	.90	-.01	.12
Personnel section: employee information	.81	.28	.10	.78	.30	.41
Organization manual	.71	-.07	.13	.80	.14	.05
Time studies	-.15	.91	.34	.03	.92	.33
Job evaluation	.46	.78	-.00	.56	.74	-.01
Motion studies	.02	.91	.24	.27	.86	.27
Work simplification	.10	.85	.16	.19	.82	.16
Employment guarantee	.02	-.23	-.03	.08	-.19	-.50
Seniority provisions	-.13	.17	.96	.29	.15	.65
Personnel section: labor relations	.32	.31	.85	.59	.16	.74
Employment stabilization plan	-.04	-.11	-.30	.07	-.12	-.63
<i>Eigenvalue</i>						
Before rotation	1773.09	1261.60	519.51	1931.28	562.66	169.87
After rotation	1534.21	1143.82	876.18	1437.15	882.69	343.97
<i>Variance explained</i>						
Before rotation	42.27%	30.07%	12.39%	63.10%	18.38%	5.55%
After rotation	36.58%	27.27%	20.89%	46.96%	28.84%	11.24%

^a See Table 6 for a listing of the industry categories included in the analyses.

^b The maximum of: percentage of firms in the industry with rating plans (performance appraisals) for clerical employees; factory workers; for supervisors; for executives; and for sales workers.

control system.¹⁰ Nor did these reforms penetrate industries that relied disproportionately on unskilled labor, such as lumber and textiles, where simple control and the legacy

of paternalistic "welfare work" practices apparently remained in effect.

1946

¹⁰ Within manufacturing, supplemental analyses revealed strong *negative* rank-order correlations between the percentage of firms in an industry having AFL contracts on the one hand and factor scores characterizing the rationalization of employment relations and application of scientific-management approaches on the other hand. Conversely, the correlations were strongly positive between the percentage of firms in each industry having CIO contracts and reliance on those clusters of personnel practices. This was particularly true by 1946, no doubt because industrial (CIO) unions were more "accommodating" to management during the War than their craft (AFL) counterparts (Bernstein 1970; Gordon et al. 1982, pp. 183-84).

Tables 5 and 6 report results for 1946. The first factor for all industries still differentiates industries in terms of their reliance on a cluster of formal bureaucratic employment procedures underpinning ILMs. Factor (2) still distinguishes industries relying on time and motion studies and work simplification, and factor (3) captures industries using seniority-related personnel policies. Reliance on craft traditions or simple control is still evident in various industries that have low scores on all three factors, including coal and coke mining, glass, printing, building materi-

Table 6. Factor Scores for Industries, 1946

Industry	All Industries Factor			Manufacturing Factor		
	(1)	(2)	(3)	(1)	(2)	(3)
<i>A. Manufacturing</i>						
Aircraft, parts	2.43	1.16	.99	2.73	.42	.82
Autos, parts	.06	1.63	.51	-.01	1.32	.97
Building materials, supplies	-1.36	-.49	.15	-1.05	-.76	-.27
Chemicals, drugs, dyes	.35	-.13	-.06	.85	-.43	-1.16
Coal and coke	-1.65	-.78	-.02	-1.34	-1.01	-.46
Electrical equipment, appliances, supplies	-.09	1.53	.14	.01	1.43	-.15
Foods, beverages, dairy	-.20	-.17	.35	.19	-.42	-.56
Glass	-1.13	-.24	.13	-.86	-.34	-.53
Instruments and scientific apparatus	.22	1.38	.06	.39	1.04	-.02
Leather	-1.29	.31	.35	-1.21	.28	.12
Machinery and accessories	.03	.70	.22	.28	.40	-.23
Metals and metal products	-.50	.78	.34	-.40	.49	.37
Paints, pigments, varnishes	-1.06	-.82	.05	-.60	-1.06	-.91
Paper and paper products	-.35	-.01	.44	-.07	-.44	.16
Petroleum and petroleum products	1.40	-1.25	1.01	2.08	-1.84	-.46
Printing and publishing	-.58	-.70	-.01	-.20	-.99	-.70
Rubber	-.41	1.62	.65	-.53	1.30	1.33
Shipbuilding	.02	-.27	1.04	-.04	-1.71	3.22
Soap and toilet preparations	.45	1.33	-.41	.83	1.24	-1.37
Textiles and textile products	-.56	.81	.21	-.50	.60	.34
Miscellaneous mfg.	-.75	.58	-.06	-.55	.48	-.49
<i>B. Nonmanufacturing</i>						
Banks and trust companies	.70	.03	-2.84			
Communications and broadcasting	1.76	-1.19	.92			
Finance companies, investment counsellors, investment trust, and stock exchange houses	-.35	-.82	-1.91			
Insurance	1.65	.01	-2.49			
Public utilities	1.06	-1.40	.84			
Transportation	.19	-1.97	1.36			
Wholesale and retail trade	.93	-.53	-.71			
Miscellaneous nonmanufacturing	-.95	-1.11	-1.25			

als, paints, and small finance and "miscellaneous nonmanufacturing" concerns.

Perhaps the most significant aspect of the 1946 results is that the pattern of factors and factor scores for all industries is now so similar to the results for manufacturing only. A tremendous rationalization and diffusion of bureaucratic employment practices occurred within and across industries during World War II. By war's end, many personnel practices were centrally administered through specialized personnel subunits, as reflected by the uniformly high loadings of the "personnel section" variables on factor (1) in Table 5. The rationalization of personnel matters spread particularly to newer manufacturing industries and those of strategic importance to the war effort, such as aircraft,

petroleum, chemicals, and scientific instruments (Baron et al. 1986). This closed the gap between manufacturing and nonmanufacturing in the prevalence of ILMs and other facets of "bureaucratic control," so much so that the aircraft-parts sector, a new mass production industry central to the war, had a higher score than *any* other industry in 1946 on factor (1) in Tables 5 and 6. Various manufacturing industries also demonstrated increased reliance during the war years on union-negotiated seniority systems including leather, lumber, machinery, and glass (see factor [3], Table 6). Time and motion studies and kindred techniques also became somewhat more prevalent, including in banking and insurance (see factor [2], Table 6), further blurring the distinction between the

control systems used in manufacturing and nonmanufacturing.

The statistical results in Table 5 document the continued presence of a separate (third) factor in 1946 capturing reliance on union-oriented employment practices, which is distinct from the two other factors characterizing clusters of personnel practices aimed at (1) bureaucratizing employment relations and extending ILMs; and (2) rationalizing production via scientific-management approaches. However, supplemental oblique factor analyses within manufacturing reveal that by 1946 this union-oriented set of personnel practices was actually more intertwined (i.e., correlated) with the other dimensions of labor control than in the earlier NICB surveys. Furthermore, there is evidence that personnel specialists or their departments were attempting to integrate union-related activities into their functions, as witnessed by the prevalence of specialized personnel department subunits in 1946 to handle labor relations (also see Kochan and Cappelli 1984). Thus, by the end of World War II, ILMs and related personnel practices, scientific-management techniques, and union-oriented employment regimes had all become more interconnected through union-management accommodation and the rationalization and diffusion of modern personnel administration.¹¹

DISCUSSION

What do these analyses suggest about the nature and sources of different work-control regimes—particularly, bureaucratic control—in industry? Based on comprehensive evidence concerning personnel activities throughout the U.S. economy in the 1930s and 1940s, our analyses document several regimes of modern labor control, which became increasingly interconnected over time and helped form separate strands of what has been termed modern “bureaucratic control.” First, banking, insurance, and trade firms combined centralized personnel functions with the

formalization of jobs, salaries, and promotions to facilitate control via long-term employment and internal labor markets. Second, modern mass-production industries used centralized personnel functions, job analysis, and employment record-keeping as adjuncts to scientific management, helping to rationalize the deployment of human resources along the same lines that engineers had streamlined production processes. We found increasing evidence of a third control system involving seniority-related personnel practices, accompanied by efforts to systematize employment rules, and this system was especially evident in industries subject to unionization pressures and in advanced sectors (e.g., petroleum, utilities) where turnover costs were high and the nature of technology made scientific management problematic. “Bureaucratic controls” thus developed in various forms, in various sections of the economy, and for various reasons, underscoring the inadequacy of monocausal arguments about the evolution of the modern employment relationship.

Our analyses suggest that by 1946, there was an increased melding within manufacturing among these three different strands of bureaucratic control. As Edwards (1979) and others have argued, bureaucratic personnel practices were already serving as adjuncts to scientific management in modern manufacturing industries in 1935 and 1939. These innovations in personnel practice continued to spread within those industries and to other sectors as well, due in large measure to governmental pressures and labor-market intervention during World War II (see Baroni et al. 1986). Our analyses also indicate that by war's end, union-negotiated employment reforms were ceding to a logic of bureaucratic control, coming under the purview of personnel specialists. While Gordon et al. (1982, pp. 185–92) argue that technical, bureaucratic, and union control became “consolidated” within “core” manufacturing firms after World War II, our results suggest that process was already underway by 1946, fueled by the war. Carroll, Delacroix, and Goodstein (1988) have recently proposed that state mobilization for war favors more elaborate, rationalized organizational forms; their proposition is certainly consistent with our evidence, which suggests that different strands of personnel reform blended and spread during the war years, producing the

¹¹ Supplemental analyses, based on the subset of personnel practices and industries that are comparable in 1935, 1939, and 1946, provide additional evidence of a melding by 1946 between control systems based on scientific management and those based on the rationalization of employment relations and extension of ILMs (details available from authors.)

comprehensive modern-day system of organizational practices that scholars have labelled "bureaucratic control."

Many accounts of the origins of ILMs and bureaucratic control have studied specific firms or industrial sectors. In contrast, our findings reflect the evolution of personnel practices across diverse industries, and therefore our results question the generality of some previous accounts. For instance, our analyses indicate that ILMs and related personnel practices were first prevalent in white-collar nonmanufacturing organizations, even as early as 1935. Some analysts, focusing on developments in manufacturing, have traced modern employment practices to the failure of scientific management (Edwards 1979) or the growing power of unions during and after the New Deal (Jacoby 1985). Our results suggest that "bureaucratic control" was already flourishing by 1935 in nonmanufacturing industries, where scientific management was hardly commonplace and unionization was never a serious threat. For instance, 73 percent of banks, 72 percent of insurance firms, and 59 percent of trade establishments in the NICB sample had personnel departments by 1935, while the mean for manufacturing companies was 29 percent. Similarly, 20 percent of banks had formal promotion and transfer systems by 1935, as did 33 percent of trade firms and 41 percent of insurance companies, compared to 11 percent of manufacturing enterprises (NICB 1936).

Why were these modern employment innovations more prevalent in service industries? Increasing firm size has often been cited as the main cause of personnel rationalization (e.g., Bendix 1956, Oi 1983), but firms in these service industries were not significantly larger than companies in modern manufacturing industries, where personnel offices and formal promotion mechanisms spread less quickly. For instance, in the 1935 NICB sample, the average firm in the modern mass-production industries—automobiles, electrical equipment, and rubber—had 40 percent more employees than the average firm in the banking, insurance, and trade sector. Yet centralized employment systems were just as prevalent in service organizations (66 percent) as in modern manufacturing firms (64 percent), and personnel departments were even more common in the service industries (66 percent of firms versus 50 percent) (NICB 1936).

Other theorists have traced internal promotion systems and other bureaucratic controls to the high turnover costs associated with extensive firm-specific skills (Doeringer and Piore 1971). One indicator of large fixed hiring costs in banking and insurance during this period is that firms sometimes required that female prospective employees promise to delay marriage (Goldin 1986). Yet skills were apparently transferred rather easily to other companies in these nonmanufacturing industries, since many banking, insurance, and trade firms developed career ladders to curb the pirating of skilled employees by competitors (Carter and Carter 1985).

However, firms in these service industries did face another important turnover cost associated with their service orientation and dependence on employee-client relationships, which was probably more significant in molding employment practices (see Bimson 1932). In fact, those industries had long depended on informal within-firm hiring practices to promote stable employment (Washington 1921; Bimson 1932; Carter and Carter 1985). Managers in these settings recognized that losing employees often meant losing clients: "a bank differs from other types of business. The right kind of employees are far more important to a bank . . . [because] half of our employees have daily contact with the public. These men and women produce new business and sell our service to the old customers" (Bimson 1932, p. 618). Although these service industries are highly institutionalized today and may depend less on personal relationships, one should not lose sight of the earlier need for employment stability to sustain a clientele. Here more than elsewhere, companies needed to be able to trust employees who were literally handling the company profits, and managers were motivated to recruit "trustworthy" white-collar personnel, which they did by hiring from their own social and ethnic group and by adopting personnel policies aimed at ensuring loyalty from these employees (Kocka 1980; Jacoby 1986). Thus, if "firm-specific skill" is conceived broadly enough to embrace these aspects of service industries, then our findings are not inconsistent with arguments about the connections between specific human capital and the rise of ILMs.

Institutional perspectives on organizations similarly suggest that service industries, which depend heavily on process (rather than

outcome) measures of performance, may formalize operating procedures to increase their own perceived legitimacy (Meyer and Rowan 1977; DiMaggio and Powell 1983). In the early 1930s, financial-service organizations faced the added pressure of a crisis of confidence occasioned by the Depression. In the finance sector, new federal regulations required expanded formalization and accountability to the Federal Reserve Board and S.E.C. (Schlesinger 1958). Efforts to formalize, rationalize, and regulate other aspects of financial services during this period no doubt spilled over to the employment relationship as well. In short, in terms of their skills, technologies, demographic composition, and institutional environments, organizations in banking, insurance, trade, and related non-manufacturing industries had much in common with governmental bureaucracies, which had already experimented extensively with modern personnel innovations through civil service reform and which provided readily accessible organizational models (Tolbert and Zucker 1983; DiPrete, forthcoming).

In addition to this strand of bureaucratic control originating in white-collar nonmanufacturing settings, our analyses uncovered a cluster of personnel practices related to scientific management and efforts to rationalize production. Modern mass-production industries combined aspects of scientific management (e.g., time and motion studies, work simplification programs) with several personnel reforms that became key components of "bureaucratic control," particularly centralized personnel functions, job analysis and specification, and extensive employment and turnover record-keeping. Those practices extended the principle of rationalizing production tasks to problems of allocating and retaining personnel. This cluster of personnel practices—and the industries in which they flourished—corresponds closely to Edwards' (1979) portrait of "technical control."

Our data furnish some clues concerning why these innovations flourished in these particular industries, even if they permit no definitive answer. As previous studies have suggested, the capacity to control labor through scientific management and machine pacing clearly depended on the nature of the product (Blauner 1964; Edwards 1979). Newer mass-production industries, such as agricultural implements, automobiles, rubber, and electrical equipment, involved sequential

production and simpler, more repetitive tasks, and were thus better suited to efforts at "engineering" work and employment. However, our results suggest that technology interacted with industry age in determining where and when scientific management flourished. These innovations diffused less quickly to older industries whose products were amenable to these techniques—such as leather, textiles, and printing—despite active management efforts to homogenize labor there (Gordon, Richards, and Reich 1982; Griffin, Wallace, and Rubin 1986). The fact that industry modernity favored the diffusion of scientific management and related personnel reforms appears consistent with Stinchcombe's (1965) claim that organizational arrangements are contingent on an industry's founding period. Indeed, those manufacturing industries that Stinchcombe classifies as "modern" exhibited the most widespread use of time and motion studies and kindred practices in our sample.

As early as 1935, we also found some evidence of a third cluster of personnel reforms, involving seniority provisions and rules and procedures apparently aimed at containing turnover and unionization among skilled workers. In utilities, transportation and communication, mining, petroleum, and (to some extent) trade, seniority incentives to reward long-term employment and formal rule books to reduce capricious dismissals by supervisors were increasingly common. In these industries, increasingly active "industrial" unions, high-skill requirements, nonrepetitive and discretionary work, and/or the decentralized nature of production made technical control less feasible, while simultaneously heightening the need for employment mechanisms that retained skilled workers and ensured their loyalty to the enterprise (Brandes 1976, p. 56; Gordon, Richards, and Reich 1982, p. 159; Mater 1940).

Thus, a combination of union pressure and labor market uncertainty apparently led these specific industries to experiment with this third strand of bureaucratic control based on seniority and rule systems. Standard Oil, for instance, issued employee rule books in the late 1910s with two express purposes: preventing unionization by offering unionlike protections; and halting the loss of skilled workers due to capricious firings by foremen (NACS 1918; Feldman 1925). In contrast, modern assembly-line industries characterized by sea-

sonal production cycles, such as automobiles, avoided early use of seniority rules, presumably because scientific management had made training and turnover less costly there. It appears that in dealing with labor market uncertainty, the seniority provisions and employment rules used in such industries as mining and petroleum were a functional alternative to the scientific management techniques and technical controls used in newer mass-production firms.

A number of industries seem not to have depended much during this period on ILM mechanisms, scientific management, or the seniority-based personnel reforms associated with industrial unionism in controlling labor. Older, less mechanized, lower-skill industries, such as food and lumber, apparently still used "simple control" extensively. Nor did modern personnel innovations diffuse as extensively in industries with strong AFL unions during this period, where scientific management and ILMs would have been possible only if "the power of the craft union, with its rules pertaining to work organization, technology, hiring, evaluation, and pay, was broken" (Griffin, Wallace, and Rubin 1986, p. 150). Our data suggest that even during World War II, in the face of significant federal involvement in the labor market, craft unions maintained substantial control over the labor process. In contrast, industrial unions displayed an increasing affinity for technical and bureaucratic controls (Piore 1982), often supporting the rationalization of production tasks and employment practices as a means of ensuring equity and career opportunities for their (less-skilled) members (Jacoby 1985; Baron et al. 1986).

The historical roots of bureaucratic control are complex and diverse. By focusing on certain manufacturing industries, past research may have been preoccupied with the causal role of unions, factory technology, and labor market conditions. Our analyses suggest that such forces, although very important, are only part of the story. We identified some factors—including historical founding conditions, the institutional environment (particularly the state), and characteristics of white-collar nonmanufacturing work—that are important elements of a richer organizational theory describing how and why employment relations evolve. Comparative organizational research, especially longitudinal and cross-national studies, would be invaluable in

developing and testing such a theory. A recent study of labor relations in Japanese manufacturing during this same era, for instance, stresses many of the same technical, organizational, and institutional factors that we have emphasized in the U.S. context, including state wartime intervention, in accounting for the rapid bureaucratization of Japanese employment relations (Gordon 1985, especially ch. 7).

Finally, our analyses underscore the benefits of unraveling such shorthands as "bureaucratic control." We tried to give that term more precise empirical content by identifying particular clusters of personnel activities used by different kinds of organizations. However, we were limited by the data available. For instance, lacking detailed enterprise-level information on formal personnel policies and informal practices, we have not been able to examine the diversity of personnel systems *within* industries. Such micro-data would almost certainly reveal tremendous unexplained variations in personnel systems among firms within a given industry, even holding constant such "imperatives" as size, technology, and unionization (for contemporary evidence, see Osterman 1984; Pfeffer and Cohen 1984; Baron, Davis-Blake, and Bielby 1986). In other words, there appears to be a wide range of equally viable systems for structuring employment within a given organizational form. We need to know much more about how workers (and firms) react over time to these alternatives for organizing personnel. For instance, if firms using the drive system or "paternalism" flourished alongside otherwise comparable firms that adopted the various personnel innovations analyzed in this paper, then we must question the argument that those innovations were necessary to solve "crises of control" facing capitalists (see Doeringer 1984). As many contemporary organizations experiment with new variants of paternalism, the drive system, and technical control in managing their human resources, research along these lines may offer important insights not only into the past but also into the future.

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THE PORTUGUESE AND HAOLES OF HAWAII: IMPLICATIONS FOR THE ORIGIN OF ETHNICITY*

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Ethnicity in Hawaii is approached as a social construct created during expansion of the capitalist world-system. "Haole" typically refers to persons of European extraction, while "Local" normally refers to those of non-European origin. Portuguese-Americans are of European origin but are considered Locals. We argue that this anomaly was brought about by the different origins of two groups in the world-system. The first Europeans came to Hawaii from the capitalist core, brought capital, and soon dominated both the economy and the polity. In contrast, Portuguese immigrants came from the periphery to serve as plantation laborers. The large initial class difference inhibited subsuming both groups within the same ethnic designation. The combined class and ethnic cleavages created a set of historical structures that reproduced these very differences. Although both Haoles and Portuguese-Americans became internally class-differentiated over time, significant class differences remained, which helped reproduce ethnic differentiation.

Hawaii has a unique two-tiered system of racial/ethnic classification in which an initial distinction is made between "Haole" and "Local"—roughly, Caucasian and Other. Further distinctions are made by national and subnational origin. Portuguese-Americans constitute an anomaly in that they are Locals despite their European extraction. The historical process that brought this about illuminates the origin of ethnicity. We begin with a theoretical overview, review the Portuguese experience in Hawaii, analyze the situation in 1980, and conclude with implications regarding the nature of ethnicity.

RACE, ETHNICITY, AND THE CAPITALIST WORLD-SYSTEM

Recently, scholars have rethought the concepts *race* and *ethnicity*. One new approach develops insights of Park (1923, 1926, 1939a, 1939b) and Lind (1939, pp. 245–75) into an analysis of race and ethnicity as social constructs created through expansion of the

capitalist world-system (Geschwender 1987). The concepts existed earlier, but race and ethnicity are qualitatively different in the modern world-system from earlier phenomena. Modern categories jointly derive from the contradictions between capital and labor and between core and periphery (Wallerstein 1974, 1980).

After capitalism first appeared in Western Europe, the cost of labor increased because of increasing proletarianization, the decline of the reserve army of the unemployed, capitalist competition for labor, and the development of labor unions. Capitalists responded to rising labor costs by engaging in imperialist expansion, exporting capital to regions of cheap labor, and importing cheap labor into the core (e.g., Bonacich and Cheng 1984, pp. 1–56). Race and ethnicity emerged as social constructs with the incorporation of new peripheral areas into the capitalist world-system. Europeans moving into nonincorporated areas encountered peoples who differed in technology, military power, state formation, cultural practices, and physical characteristics. This provided both exploitative opportunities and the grounds for a mutually reinforcing, justifying rationale in the form of racist ideology.

Race and ethnicity also emerged from the

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capital-inspired movement of peripheral peoples to areas in which cheap labor was needed. Immigrants do not automatically comprise an ethnic group simply because they differ from natives in physical and/or cultural characteristics. The probability of this happening is largely a function of opportunity structures (e.g., Portes and Bach 1985, pp. 29–37; Yancey, Erickson, and Julian 1975, pp. 393–95). Migration networks and labor-market opportunities combine to steer immigrant peoples into certain regions, industries, and occupations. Intraclass struggles erupt if native workers or earlier immigrants perceive the new arrivals as an economic threat—competitors for scarce or desired jobs. This, in turn, may stimulate immigrant ethnic consciousness and mobilization (Nagel and Olzak 1982, p. 130; Olzak 1983, pp. 362–64). Ethnic emergence does not require a previously shared common culture, sense of identity, or a common region of origin; numerous ethnic groups have been formed without one or more of these attributes (e.g., Killian 1970; Nagel and Olzak 1982, pp. 128–30). Neither physical nor cultural characteristics shape an immigrant people into an ethnic group. Rather, this may be brought about in the area of settlement by the class structure and class struggle (both inter- and intraclass), as reflected in the social organization of production, the opportunity structure, and the intensity of opposition. Whenever an immigrant people becomes defined as an ethnic group, the working class is fragmented, reducing its ability to resist capital. Ethnic group members often are placed at a competitive disadvantage, have limited opportunities, and retain ethnic identity over generations. The formation of Portuguese ethnicity in Hawaii provides a fascinating example of these processes.

THE CREATION OF HAOLE, LOCALS, AND PORTUGUESE

Haole combines two Hawaiian words: *ha* (breath) and *ole* (without) and initially designated persons who could not speak Hawaiian (foreigners). The first foreigners were light-skinned Europeans, so the concept took on racial and, later, class connotations (Lind 1980, pp. 23–24; Nordyke 1977, p. 29). Hawaii became a major coaling and wintering stop after Captain Cook made first contact in 1778 (for a more detailed descrip-

tion, see Geschwender 1981, 1982). European and American merchant houses established local outlets, and New England missionaries arrived in 1820. Although Hawaii remain an independent monarchy until 1893, European immigrants soon came to own the bulk of the potentially valuable agricultural land, control the economy, and dominate the polity. Haole came to imply membership in the ruling class. The population of Hawaiians soon proved too small to meet growing labor needs on sugar plantations established by the Haole elite, and labor had to be imported, primarily from Asia.

MacGregor stated that Local refers to the inclusive category of peoples who were created and shaped by Hawaii's agricultural history (quoted in Woo 1975). They differed in national origins, but all originated in peripheral societies and served as plantation labor. The shared plantation experience shaped the labeling, categorization, social evaluation, identity, and subsequent history of Locals. She also said that Haoles came from capitalist-industrial (core) societies with fully elaborated economies. The crucial factor in ethnic formation was that those from core societies brought capital, while those from peripheral societies had only their labor power. Immigrants from peripheral societies were simply thought of as non-Haoles for an extended period, before the emergence of the umbrella identity Local.

Portuguese-Americans are descendants of the largest European group to enter Hawaii as plantation labor (Hormann 1954, p. 47; Estap 1940, 1941). The Reciprocity Treaty between the United States and the Hawaiian Kingdom stimulated expansion of sugar production and a massive search for plantation labor (Kuykendall 1967, pp. 122–26). The first labor recruits came from Asia and proved to be less tractable than the planters desired. The high cost of importing workers who would leave the plantations as soon as possible, combined with fear of an alleged growing Asian influence, stimulated a desire for a stable work force. The desire for permanent settlers virtually dictated the recruitment of families and, especially after annexation in 1898, Europeans eligible for citizenship. Between 1878 and 1887, almost 12,000 Portuguese were brought to Hawaii from Madeira and the Azores. Then, between 1906 and 1913, almost 13,000 people, mostly Portuguese but some Spaniards, came to Hawaii in response

to an offer of a house, an acre of land, and improved working conditions. Most of the Spaniards eventually left Hawaii for California, but large numbers of Portuguese remained permanently. The Portuguese immigration came at a time when Portugal was an agricultural society outside the capitalist core. The immigration included an unprecedented proportion of women and children (24 percent women, 41 percent children), creating the basis for a permanent settlement (Felix and Senecal 1978, pp. 28–30). Scholars generally agree that the Portuguese immigrants were not considered Haolés but agree less on the reason for this (Fuchs 1961, p. 56; Kimura 1955, p. 121; Estap 1941, p. 66). A variety of causal factors are frequently cited including Portuguese origin in southern Europe, peasant background, poverty, swarthy skins, and introduction as workers, but the actual process is more complex than a simple listing of causal factors would suggest.

Hormann (1954, p. 47) noted an association between statistical record keeping and social identification of groups. Official census records for Hawaii from 1853 through 1930 included a category of Total Caucasians subdivided into Portuguese and Other Caucasians. Portuguese were acknowledged to be Caucasians but also recognized as different from Haolés. From 1910 through 1930, Spaniards were listed separately among Total Caucasians. In 1900 and 1901, 5,200 Puerto Ricans were brought to Hawaii to work on plantations and were listed separately within Total Caucasians from 1910 to 1950 (Nordyke 1977, p. 3). In 1940, Portuguese and Spaniards were merged into Other Caucasians. Separate identification of Puerto Ricans ceased in 1960 when some were included as Caucasians and most were classified into other racial categories. In 1890, 12,719 Portuguese comprised 14 percent of Hawaii's population and slightly over two-thirds of the Total Caucasian population. They increased to 27,588 in 1930, but population growth reduced them to only 8 percent of Hawaii's population and about one-third of the Caucasians. Spanish-Americans peaked at 2,430 in 1910, comprising 1 percent of the population and 5 percent of Caucasians. Puerto Ricans peaked at 9,551 in 1950, comprising 2 percent of the population and 3 percent of Caucasians.

The social distinction between Haolés and Portuguese did not result from physical

differences (Krauss 1943; Nordyke 1977, p. 39; Hormann 1954, p. 48). Between 300 and 400 Portuguese were in Hawaii prior to the labor importations. An undetermined number were former whalers from the Cape Verde Islands who had both European and African ancestry. They did not maintain themselves as a community, were never officially considered Caucasian, intermarried with Hawaiians and part-Hawaiians, and did not become part of the Portuguese community that developed later. The Portuguese plantation workers emigrated from areas that were not characterized by racial mixing, although some intermarriage in the Atlantic Islands took place between Portuguese and a small population of Flemings, English, Scots, and Irish. However, Taft (1923, p. 119) noted that in 1910 the Portuguese population in Hawaii consisted of 7,585 people from mainland Portugal and 913 born in the Atlantic Islands. Krauss (1943) concluded that these Portuguese immigrants were clearly Caucasian and were always recognized as such.

The Portuguese experience contrasts sharply with that of Germans (Taylor 1925, pp. 25, 65–66, 85; Hormann 1931, pp. 65–83). The 1,400 Germans who were brought to Hawaii as plantation laborers between 1881 and 1897 were preceded by German capitalists. Hackfield, one of the original merchant houses, was founded with German capital, became a major sugar agency, owned and operated a number of plantations, and imported the German agricultural workers. Thus, German immigrants were brought into a multiclass community and did not become identified as agricultural laborers. Anti-German feelings developed during World War I and were exploited to divest German capitalists of their holdings. Many Germans left Hawaii, but those remaining were rapidly integrated into the Haole community. Scandinavians (primarily Norwegians) were the only other Europeans to enter as agricultural workers in significant numbers. About 600 came in 1881, but few remained long, and those who did were experienced artisans and tradespersons, moved to urban areas where they could use their skills, and were rapidly absorbed into the Haole community. The fact that Germans and other non-English-speaking Europeans could be accepted as Haolés along with Britons and Americans suggests that the distinction between Haolés and Portuguese was not caused by cultural differences, but

rather by the combination of region of origin (core versus periphery) and entry into the social organization of production in different class situations.

ETHNICITY, ETHNIC FRAGMENTATION, AND MOBILITY

Portuguese immigrants acted as a middle-man minority between Haole owner-managers and Asian workers (Kawahara 1973; see also Bonacich 1973; Bonacich and Modell 1980). The best plantation jobs largely went to Haoles, but Portuguese rapidly climbed from general labor to positions of *luna* (first-line supervisor) and craft worker (e.g., Fuchs 1961, pp. 53–59). Fuchs argued that Portuguese were favored as Europeans, not as Haoles. Portuguese mobility on the plantations may have partially resulted from favored treatment, but inevitably would have been brought about by the continued expansion of plantation labor, which created a need for additional skilled workers and first-line supervisors (Estep 1940, p. 2; 1941). Ceilings were placed on their mobility opportunities. In 1901, three times as many Portuguese as any other nationality group were *lunas*, yet none had been made assistant to the head overseer. In 1915, Portuguese workers dominated the *luna* position to an even greater extent, despite the fact that Japanese workers outnumbered them on the plantations by a ratio of ten to one. Yet, none had been appointed head overseer. Daws (1968, p. 315) described the emerging plantation order in castelike terms, stating that Portuguese could become *lunas* but nothing more, because higher ranking supervisors would always be “white men”—Haoles.

Portuguese-Americans initially resisted the implications of the official classification that set them apart from Haoles by attempting to minimize any differences between themselves and Haoles. At the same time, they accepted the implication that they were not the same as persons of Asian ancestry and emphasized all differences (Fuchs 1961, p. 59; Kimura 1955; Lind 1928; 1980, pp. 65–66). Planters encouraged this. Portuguese workers consistently were paid higher wages than Asians with comparable jobs, although they were always paid less than Haoles, usually less than part-Hawaiians and, sometimes, even less than Hawaiians. In 1910, Caucasian skilled workers on plantations averaged \$3.85

per day, as opposed to \$1.56 for Portuguese workers. Portuguese overseers were paid \$46.91 per month in 1915, compared to \$52.99 for Hawaiians and \$104.95 for Caucasians.

Planters used segregated work camps and work gangs along with differential pay to prevent the development of worker unity (Geschwender 1981). The combination of desire for advancement and perceived favored treatment made Portuguese workers vulnerable to manipulation and allowed the planters to use them as middle men and as strikebreakers during strikes by Asian workers. Only after World War II did ethnic differences decline in importance, allowing unionization of the plantation work force (Levine and Geschwender 1981).

Sanborn and Katz (1974, pp. 73–74) noted that the Portuguese population grew more rapidly than did available plantation jobs, forcing a migration of the second generation from the plantations. Some went to the cities, others attempted to retain their association with Haole planters by becoming contract laborers or by growing sugar on leased land as subcontractors, while still others became independent farmers—especially of coffee. The urban rank order of nationality groups, measured by salary and wage levels, resembled that on the plantations (Fuchs 1961, p. 55). By the outbreak of World War II, Portuguese-Americans still had not gained acceptance as Haoles or made significant relative socioeconomic advances. Scholars have suggested that their lack of upward mobility resulted partly from lack of investment in education (Werner, Bierman, and French 1971, pp. 120–23; Werner and Smith 1977, pp. 150–73). Fuchs (1961, pp. 58–59) suggested that this, in turn, may have resulted from their perception of relative achievement in plantation society and the expectation that this relative advantage would continue (see also Sanborn and Katz 1974, pp. 73–74). But Hawaii changed (Geschwender 1982). Tourism, military bases, and governmental spending became the leading industries. Labor was organized after World War II. Haole political hegemony was overturned and outside capital came into Hawaii, undermining Haole economic dominance. Portuguese-Americans had “bet on the wrong horse” and were poorly situated to compete outside of a plantation society.

There is no scholarly consensus as to

whether (or when) Portuguese-Americans acquired Haole ethnic status or equal economic opportunity. Castro (1911, 1914) claimed that they were culturally assimilated prior to World War I, whereas Estap (1940, 1941, 1978) dated full assimilation at 1940. Neither suggested that Portuguese-Americans shared equal opportunity with Haoles. However, this is precisely what Lind (1980, p. 86) suggested when he interpreted the low percentage of laborers in the merged Caucasian group in 1950 and 1977 as indicating a growing similarity in socioeconomic status. Kawahara (1973, p. 15) disagreed, finding that Haoles retained their socioeconomic dominance between 1914 and 1973, while the relative position of Portuguese-Americans *declined*. In 1974, Fuchs expressed a fear that the Hawaiian educational system was creating a two-class society (Wilcox 1974). Haole, Chinese-, and Japanese-American children attended private schools; the public schools educated Hawaiian-, Filipino-, Samoan-, and Portuguese-American children, increasing the economic disparity between affluent and poor groups.

If, as Romanzo Adams (cited in Estep 1940, p. 2) suggested, the original distinction in official record keeping implied that Portuguese, Spaniards, and Puerto Ricans were of lower social status, then the later change in official record-keeping practices might imply that they had become fully assimilated into the Hawaiian social order and no longer were at a competitive disadvantage. Sanborn and Katz (1974, p. 72) did not believe that the social difference between groups disappeared. Kimura (1955) further argued that Portuguese-Americans no longer seek Haole status. Petersen (1969, pp. 871-72) claimed that the shift in classification was partially a response to Portuguese-American demands—made at a time when they retained a distinctive way of life and were concentrated by income and occupational level—and partially was made for administrative convenience to bring Hawaiian record keeping into line with the United States. After the distinction was eliminated, Portuguese-Americans developed group pride and a resurgence of interest in Portuguese culture, no longer saw the need to distance themselves from Asian-Americans, and proudly identified themselves as Locals. We now examine the situation as of 1980 to determine whether Portuguese-Americans and

Haoles have become integrated into a single ethnic group sharing equality of opportunity.

HAOLES AND PORTUGUESE IN 1980

We examine 1980 census data (United States Bureau of the Census 1980). In the census, race was ascertained by asking, "Is this person . . ." with suggested responses "White, Black or Negro, Japanese, Chinese, Filipino, Korean, Vietnamese, Indian (Amer.) print tribe____, Asian Indian, Hawaiian, Guamanian, Samoan, Eskimo, Aleut, and Other—specify." A second question asked, "What is this person's ancestry? (For example, Afro-Amer., English, French, Honduran, Hungarian, Irish, Jamaican, Korean, Lebanese, Mexican, Nigerian, Polish, Ukrainian, Venezuelan, etc.)." A third asked, "Is this person of Spanish/Hispanic origin or descent?" with the following possible responses: "No (not Spanish/Hispanic); Yes—Mexican, Mexican-American, Chicano; Yes—Puerto Rican; Yes—Cuban; Yes—other Spanish/Hispanic." Respondents answering White to race were classified Haole, Portuguese-, Puerto Rican-, or Spanish-American based on responses to the two ancestry questions. Spanish- and Puerto Rican-Americans were excluded from further consideration because of their small numbers. Haoles and Portuguese-Americans are the two largest European-origin groups in Hawaii and the two for whom there is the richest historical material.

Military personnel are excluded, as they head more Haole than Portuguese-American families (26.1 to 1.4 percent) and they tend to be mainlanders temporarily stationed in Hawaii. The 2,505 civilian Haole families had a median family income of \$24,880, compared to \$20,010 earned by the 505 Portuguese-American families. The difference in mean family incomes was roughly of the same magnitude (\$28,049 to \$23,214). More Haole families (12 to 8 percent) are in the top 10 percent according to family income, whereas more Portuguese-American families are among the lowest tenth (15 to 12 percent) and more Portuguese-American families live below the official poverty line (11 to 7 percent). Haoles have retained their privileged position relative to Portuguese-Americans, although both groups are internally differentiated by income levels.

Our designation of Portuguese-American excludes persons who did not identify them-

selves as White but responded Portuguese as first or second ancestry, along with those who identified themselves as White, gave a different European group (e.g., English) as their first ancestry, and selected Portuguese as their second. We separately compared each category to those designated Portuguese-American. Although the former appeared lower in socioeconomic status, differences were not statistically significant. The latter group was of equivalent status (data available on request). Non-Whites were excluded from further analysis, but Whites with some Portuguese ancestry were included as Haoles, diminishing the probability of finding significant differences between Portuguese-Americans and Haoles.

Male socioeconomic status is examined. Females are excluded to simplify the presentation of a complex issue. Data in Table 1 reveal that Haole males are better educated, especially at the highest levels. Proportionately seven times as many Haoles as Portuguese-Americans have 16 or more years of schooling; this is the level most likely to pay off in better jobs. Haole males also possess significantly higher occupational status. They are more than two and a half times as likely to hold a management or professional job, are more than twice as likely to have a white-collar occupation, and have higher mean occupational status scores (see Stevens and Cho 1985 for the measurement of occupational status). Haole males have a \$1,000 higher median and a \$3,000 higher mean salary and wage income than Portuguese-Americans, suggesting a greater concentra-

tion of high income. Salary and wage income includes only earned income, whereas total income includes investments and transfer payments. Median total income of Haole males is \$1,000 higher than median salary and wage income, while it is \$1,000 lower for Portuguese-Americans. The difference between total income means is greater than that between medians. Haole males both earn more and have more income from sources other than the sale of labor power.

Age controls are important because Portuguese-American males average 2.8 years older than Haoles. The age range is divided into 25-39.9 and 40 to 54.9. The lower limit is the age by which most males have completed their education; the upper limit is the age at which males begin to drop out of the labor force in significant numbers. Data in Table 2 reveal that Haoles are better educated, have higher occupational status, and have higher salary and wage and total incomes in each of the two age categories (all differences are statistically significant). Older Haoles are more relatively advantaged than younger Haoles, with the greatest age-related increase in differentials found in salary and wage and total income. Haoles appear to be more likely to enter occupations in which time brings career advancement and rising income.

Haoles and Portuguese-Americans have had different historical experiences leading to different residential patterns, which may help to explain differences in socioeconomic status and access to occupational career ladders. Portuguese remained on plantations longer

Table 1. Socioeconomic Status of Males by Ethnicity: Hawaii, 1980

Status Characteristic	Indicator	Haoles	Portuguese-Americans
Education	N	4,015	685
	% 16 or more years	33.0	4.7
	% at least 13 years	57.2	17.0
	% 12 or more years	84.4	56.6
	Mean years comp.	13.8	10.7
Occupation	N	3,250	509
	% man. & prof.	39.8	15.3
	% white collar	61.9	29.8
	Mean Status Score	42.11	29.84
1979	N	3,043	480
Salary & wage Income	Median	\$14,005.00	\$13,005.00
	Mean	\$16,923.80	\$13,904.20
1979	N	3,776	635
Total Income	Median	\$15,005.00	\$12,005.00
	Mean	\$18,575.30	\$13,985.40

Table 2. Socioeconomic Status of Males by Age and Ethnicity: Hawaii, 1980

Status Characteristic		29-39.9		40-54.9	
		Haole	Port.-Amer.	Haole	Port.-Amer.
Years of schooling	X	14.6	12.1	14.5	11.2
	N	1,517	207	811	137
Occupational status score	X	43.33	30.09	47.66	31.94
	N	1,481	197	783	126
1979 salary & wage income	X	\$16,378.06	\$14,566.05	\$24,525.43	\$18,048.70
	N	1,304	181	681	119
1979 total income	X	\$17,431.46	\$14,932.13	\$26,430.55	\$18,493.86
	N	1,468	202	794	132

than other groups and often left to enter other agricultural pursuits. Data in Table 3 reveal that the two most successful ethnic groups (Chinese- and Japanese-Americans) are the most highly concentrated in urban and central city locations (see Geschwender and Carroll-Sequin, forthcoming). Portuguese-Americans, Filipino-Americans, and Hawaiian-Americans are the least concentrated in urban and central city locations; they have been least successful. Urban areas may provide better access to education and greater opportunities to translate education into desirable jobs and higher income. Urban concentrations also facilitate political and labor organizational efforts, which may have an economic payoff. Thus, historical choices made for what, at the time, appeared to be sound economic reasons shaped residential patterns that ultimately restricted opportunities for upward mobility by Portuguese-Americans.

The data in Table 4 reveal that Haoles are better off than Portuguese-Americans wherever they live. All differences are statistically significant except for family income outside of SMSAs. Haoles in the central city have significantly higher levels of education, occupational status, family income, salary and wage income, and total income than Haoles living either elsewhere in the SMSA or outside of SMSAs. Haoles living elsewhere in the SMSA have significantly higher

levels of occupational status, family income, and total individual income than Haoles living outside of SMSAs. Urban residence is also associated, but to a lesser extent, with higher status for Portuguese-Americans. Portuguese-Americans living in the central cities have significantly higher levels of education, occupational status, and family income than either those living elsewhere in the SMSA or those living outside SMSAs. They also have significantly higher levels of salary and wage and total individual income than those living outside SMSAs. There is no significant difference in these variables between those living in central cities and those living elsewhere in the SMSA. The only statistically significant difference between Portuguese-Americans living elsewhere in the SMSA and those living outside SMSAs is higher salary and age income for the former. It appears that urban residence provides a greater opportunity for economic success, but more so for Haoles.

These findings suggest that the current relative disadvantage of Portuguese-Americans results less from current discrimination than from the legacy of historical choices they made in the pursuit of acceptance and economic security. The consequences may be viewed as a causal chain. Portuguese-Americans are disproportionately concentrated in rural areas where access to education

Table 3. Proportional Distribution of Families by Area of Residence and Ethnicity: Hawaii, 1980

Nationality	Central City of SMSA	Elsewhere in SMSA	Outside SMSA	N
Haole	46.1	29.7	24.2	3,982
Portuguese-Americans	26.5	31.2	43.3	631
Chinese-Americans	72.5	20.8	6.7	884
Japanese-Americans	50.0	27.7	22.4	3,887
Filipino-Americans	30.6	39.2	30.2	1,512
Hawaiian-Americans	29.4	39.7	31.0	1,444
Total in Hawaii	45.0	31.1	23.9	13,343

Table 4. Socioeconomic Status of Males by Area of Residence and Ethnicity: Hawaii, 1980

Area of Residence	Status characteristic	Haoles		Portuguese-Americans	
		N	Mean	N	Mean
Central city of SMSA	Age	1,655	41.9	166	42.8
	Education	1,655	14.3	166	11.5
	Occup. status	1,462	42.25	133	34.90
	Salary & wage income	1,270	\$18,091.87	112	\$14,693.93
	Total individual income	1,579	\$19,987.25	157	\$15,472.39
	Total family income	943	\$30,731.52	125	\$25,242.60
Elsewhere in the SMSA	Age	1,387	37.8	234	41.4
	Education	1,387	13.4	234	10.6
	Occup. status	1,212	40.75	182	28.86
	Salary & wage income	1,092	\$16,374.68	164	\$14,979.21
	Total individual income	1,279	\$18,095.98	213	\$14,019.22
	Total family income	933	\$28,099.32	174	\$23,439.22
Outside of SMSA's	Age	973	39.2	285	43.4
	Education	973	13.6	285	10.4
	Occup. status	871	37.08	234	27.34
	Salary & wage income	681	\$15,625.78	204	\$12,606.32
	Total individual income	918	\$16,814.58	265	\$13,077.17
	Total family income	629	\$23,951.22	206	\$21,793.74

for children is limited. Past occupational choices may also have led to a lack of emphasis on the need for formal education. Consequently, Portuguese-Americans are less well educated. Education and residence patterns may combine to inhibit occupational achievement, because urban areas provide greater access to desirable jobs. Salary and wage income is jointly determined by occupational status, education (which leads to career advancement within an occupation), and location (if better paid jobs are found in urban areas).

We tested this proposed causal sequence using least squares and logistic regression (Freund and Littell 1986; Petersen 1985). Only the former will be reported since they produced similar results. The dependent variable (Linci) is log of 1979 salary and wage income coded to the nearest five dollars. Ethnicity, symbolizing the historical legacy of group choices, is a dummy variable coded as Portuguese-American (Port) and Haoles, with the latter the missing category. Location is measured with dummy variables for residence outside an SMSA (Rural), residence within an SMSA but outside the central city (Suburb), and residence within the central city (Cencity). Each predictor equation is first run using Rural as the missing category and then repeated using Cencity. Only the results of the first run are reported in Table 5. The relative impact of

central city and suburban location is reported in the text. Education (Educ) is coded in number of years completed, and occupational status (MSEI) is coded according to procedures developed by Stevens and Cho (1985). Hours worked in 1979 (Hourswd) is included as an external factor related to salary and wage income. Age (Age) is included in the analysis because mean age differs by ethnic group and residential area. Age squared (agesq) is included because age is a complex variable reflecting generational differences in access to education, opportunity structure at time of entry into the labor market, and work experience—factors that may be differentially related to income.

Data in Table 5 reveal that, even with age controls, Portuguese-Americans are more likely to reside in rural areas and less likely to reside in central cities. Rural residents are younger and suburban residents older. This suggests that maturation brings migration from rural areas, especially to suburbs. Age is positively, and age squared negatively, associated with educational achievement, suggesting a curvilinear relationship. Both rural and suburban locations inhibit educational achievement relative to the central city. Portuguese identity is associated with lower education. Age and age squared are the most powerful predictor variables followed, in descending order of importance, by ethnicity and residential location. Both education and age are posi-

Table 5. Proposed Causal Sequences Among Occupational Status, Education and Residential Location Determining 1979 Salary and Wage Income, Hawaii

Dependent Variable	Independent Variable	Parameter Estimate	T-Ratio	Standardized Estimate
Cencity	Intercept	0.3773**	9.46	0.0000
	Port	-0.1796**	-6.56	-0.1244
	Age	0.0008	0.77	0.0145
	R ²	.0155**		
	Adj. R ²	.0148		
Suburb	Intercept	0.2090**	5.35	0.0000
	Port	0.2139	0.80	0.0152
	Age	0.0034**	3.36	0.0641
	R ²	.0044**		
	Adj. R ²	.0037		
Rural	Intercept	0.4136**	11.30	0.0000
	Port	0.1582**	6.30	0.1191
	Age	-0.0042**	-4.42	-0.0837
	R ²	.0202**		
	Adj. R ²	.0195		
Educ	Intercept	6.119**	5.36	0.0000
	Cencity	0.9487**	6.99	0.1591
	Suburb	0.1868	1.34	0.0291
	Age	0.4365**	7.26	1.2787
	Age ²	-0.0057**	-7.46	-1.3147
	Port	-2.6622**	-16.47	-0.2953
	R ²	.1387**		
	Adj. R ²	.1371		
	Intercept	-55.6459**	-7.99	0.0000
MSEI	Education	3.5564**	30.32	0.5088
	Cencity	6.8852**	8.32	0.1608
	Suburb	4.7928**	5.69	0.1086
	Age	2.0508**	5.56	0.8715
	Age ²	-0.0219**	-4.70	-0.7371
	Port	-3.3422**	-3.22	-0.0533
	R ²	.3524**		
	Adj. R ²	.3510		
	Intercept	5.0891**	15.66	0.0000
LIncl	MSEI	0.0056**	6.15	0.1324
	Hourswd	0.0005**	23.81	0.4142
	Educ	0.0168**	2.65	0.0564
	Suburb	0.0864*	2.19	0.0465
	Cencity	-.0062	-0.16	-0.0034
	Age	0.1336**	7.80	1.3326
	Age ²	-0.0014**	-6.50	-1.1074
	Port	0.0355	0.76	0.0137
	R ²	.3379**		
	Adj. R ²	.3356		

* Significant at .05 or beyond.

** Significant at .01 or beyond.

tively associated with occupational status, but Portuguese-American ethnicity and age squared are negatively associated, a curvilinear relation between age and occupational status is suggested. Rural residence inhibits occupational achievement relative to suburban residence, which, in turn, exhibits a depressive effect relative to a central-city location. Age and age squared are the two most important predictor variables, followed, in descending order of importance, by education, area of residence, and ethnicity.

Age and age squared are the two most important determinants of log of salary and wage income, followed, in descending order of importance, by hours worked in 1979, occupational status, and education. Age is curvilinearly related to log of income. No relationship is found between log of income and either area of residence or ethnicity.

A separate analysis of the two ethnic populations (see Table 6) reveals a curvilinear relation between age and education among Haoles, whereas age is not related to

Table 6. Causal Sequences Among Salary and Wage Income, Occupational Status and Education by Ethnicity: Hawaii, 1979

Dependent Variable	Independent Variable	Haoles		Portuguese-Amer.		Differences	
		Parameter Estimate	T-Ratio	Parameter Estimate	T-Ratio	Degrees of Freedom	F-Value
Educ	Intercept	5.4683**	4.45	7.9873**	2.63		
	Cencity	1.0109**	6.94	0.5502	1.42	1/354	1.41
	Suburb	0.2568	1.70	-0.1471	-0.43	1/354	1.42
	Age	0.4631**	7.13	0.2418	1.51	1/354	1.92
	Age ²	-0.0059**	-7.23	-0.0036	-1.82	1/354	1.31
	R ²	.0438**		.0435**		4/354	2.50*
	Adj. R ²	.0422		.0327			
MSEI	Intercept	-58.8822**	-7.72	-35.1435**	-2.18		
	Educ	3.6924	29.07	2.4553**	8.26	1/331	17.32**
	Cencity	7.0616**	7.80	5.4591**	2.72	1/331	0.64
	Suburb	5.0211**	5.35	3.3546	1.90	1/331	0.89
	Age	2.1228**	5.24	1.5016	1.80	1/331	0.55
	Age ²	-0.0300**	-4.48	-0.0148	-1.42	1/331	0.60
	R ²	.3302**		.2141**		5/331	4.25**
LIncl	Adj. R ²	.3287		.2022			
	Intercept	5.0991**	14.10	5.2153**	7.91		
	MSEI	0.0059**	5.90	0.0044*	1.97	1/303	0.46
	Hrswd	0.0005**	22.13	0.0005**	8.94	1/303	0.12
	Educ	0.0139*	1.98	0.0342*	2.52	1/303	2.25
	Cencity	-0.0391	-0.90	0.1672*	2.02	1/303	6.19*
	Suburb	0.0513	1.14	0.2303**	3.22	1/303	6.27*
	Age	0.1348**	7.06	0.1220*	3.58	1/303	0.14
	Age ²	-0.0014**	-5.82	-0.0013**	-3.08	1/303	0.04
	R ²	.3388**		.3525**		7/303	2.24*
	Adj. R ²	.3365		.3376			

* Significant at .05 or beyond.

** Significant at .01 or beyond.

education among Portuguese-Americans; intergroup differences are not statistically significant. Area of residence is not associated with level of educational achievement among Portuguese-Americans, but central city residence is a significant advantage over either rural or suburban residence among Haoles; intergroup differences are not statistically significant. This suggests that simply being Portuguese-American is a handicap in acquiring a formal education, while residential location is an important determinant for Haoles. Education and nonrural residential location are positively associated with occupational status for Haoles, while age is curvilinearly related. Education is positively associated with occupational status among Portuguese-Americans, but rural residence is a handicap relative to the central city. Education has significantly greater payoffs for Haoles than for Portuguese-Americans. The differential relationship between education and occupational status suggests discrimination in the labor market that may be more evident in the central city, where there are more opportunities for advancement. Occupa-

tional status, hours worked, and education are all positively, and age curvilinearly, related to log of income for both ethnic groups. Rural residence depresses income for Portuguese-Americans, but not for Haoles. The latter is the only significant intergroup difference and suggests that Portuguese-Americans in rural areas have limited opportunities, but Haoles may come as adults to assume lucrative jobs.

These findings are consistent with the proposed causal chain, but the effect of ethnicity is stronger than anticipated. Ethnic identity affects residential location, which, along with ethnicity, affects educational achievement. Education, area of residence, and ethnicity all affect occupational status. The apparent discrimination against Portuguese-Americans in the labor market was not predicted. It may result more from preferential hiring practices of upwardly mobile ethnic groups (e.g., Japanese- and Chinese-Americans) designed to further their own collective mobility and less from discrimination by Haoles. Occupational status and education each have independent effects on

salary and wage income, whereas area of residence has a direct effect for Haoles but only an indirect effect, through education and occupation, for Portuguese-Americans. There is no income discrimination against Portuguese-Americans.

We should introduce two warnings at this point. We argue that rural residence restricts access to education for young people, but the Census reports only current residence. There is slippage between concepts and empirical measurement that can be corrected only through further research using life-history data. A second area requires additional research. We ran a second series of regressions separately for males between the ages of 25 and 39.9 and for males between 40 and 54.9 (data available on request). Portuguese identity was associated with a lower level of educational achievement in both groups, but we found significantly less inequality among those aged 40 and under. This suggests a trend toward greater equality of opportunity, but we cannot test for it because this would require longitudinal data, and the 1970 census does not allow for separate identification of Portuguese-Americans. We will either have to await the 1990 census or use life-history data.

Portuguese-Americans and Haoles were historically constituted as different ethnic groups. They continue to differ in socioeconomic status, and there is evidence that they remain distinct ethnic groups. Mejer (1987, p. 184) noted that Portuguese acted as a middle man minority that generated stereotypes that made them the butt of ethnic humor, both historically and at present. This observation is supported by participant observation conducted over several years by the senior author. Portuguese-Americans remain the butt of ethnic humor and are still called Locals by all segments of the community. Community associations further community solidarity, maintain Portuguese identity, and preserve Portuguese culture.

DISCUSSION AND CONCLUSIONS

The concept *Haole* evolved in Hawaii to give an ethnic designation to a group that occupied a particular class position—immigrants of European origin who brought capital, became the ruling class, and differed from the remainder of the population in terms of physical and/or cultural characteristics. Portuguese came to Hawaii as plantation workers.

The physical characteristics that they shared with earlier European immigrants were not sufficient to allow them to be classified in the same census category or to receive Haole status. Separate census designation symbolized class differences and gave particular emphasis to the relation between class and ethnicity. Portuguese ethnicity was initially generated by class position and fed back into class through restricted mobility opportunities. Ethnic groups are not created by the conscious manipulation of the capitalist class but emerge out of the social organization of production and exchange. Capitalists are often aware of the process and manipulate it for their own ends. The planter class understood the role that ethnicity could play, maintained a diverse work force, and manipulated differences to facilitate labor control.

Portuguese were encouraged to emulate Haoles by planters who provided access to craft and *luna* occupations and paid them more than Asian workers doing similar work. This apparent favoritism carried over to those Portuguese who left the plantations. Portuguese-Americans selected a strategy for advancement shaped by advantages believed to come from Haole favoritism. This strategy became an "ethnic mobility trap" as described by Wiley (1967). Initially, it appeared to pay off in collective advancement, but its continued success depended on the continuation of a plantation society dominated by Haoles. However, plantation agriculture declined in importance after World War II, organized labor undermined Haole economic dominance, and the Democratic party, especially the Japanese-American faction, undermined their political rule. Still, Haoles remain disproportionately concentrated in the economic elite and Portuguese-Americans have experienced limited mobility. They are less well educated, have lower status occupations, and earn less than Haoles. Consequently, it is not surprising to find that an ethnic distinction remains. Portuguese-Americans no longer identify with Haoles but define themselves as Locals. The elimination of the stigma associated with a separate official classification seemed to allow real differences in social position to rise to the forefront of consciousness. This was accompanied by a growing awareness of the common historical experiences of all groups that had labored to create the wealth appropriated by Haoles. Once again, ethnic identity emerged in response to

a shared position in the social organization of production. Ethnicity (i.e., the global ethnic category Local) was again created out of a shared class situation (that of agricultural labor). Ethnic discrimination and class exploitation combined to create differential opportunity, influence strategies for advancement, and, consequently, determine opportunities for future mobility. It is precisely the shared identity as Locals that facilitated those organizational efforts in the political and work arenas that brought about the replacement of Haole political hegemony with a two-party system and the unionization of the labor force that has come to be known as *Democratic Revolution* in Hawaii. Class is not independent of ethnicity. Each is both cause and effect of the other. Both result from processes set in motion by the capitalist organization of production in its global, regional, and local manifestations.

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OCCUPATIONAL DISPUTES IN MECHANICAL AND ORGANIC SOCIAL SYSTEMS: AN EMPIRICAL STUDY OF ELEMENTARY AND SECONDARY SCHOOLS*

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Scholars disagree about the relationship between division of labor and intraorganizational conflict. From one perspective, division of labor increases goal disagreement, which in turn leads to conflict. Another view suggests that division of labor reduces both administrative control and levels of conflict. A third poses that division of labor enhances administrative control to suppress conflict. Using Durkheim's distinction between mechanical and organic social systems, this paper examines the antecedents of conflict in 111 American public schools. A causal model is tested using measures of role specialization, goal disagreement, dominance of rules, and occupational disputes. Data provide most support for the perspective that division of labor is indirectly but ultimately related to disputes through direct correlations with both goal disagreement and enhanced control. However, disputes increase and do not decrease when rules dominate the control structure.

Ralf Dahrendorf (1958) once said that the task of a distinctively sociological theory of conflict is to produce evidence that conflict results from certain structural arrangements. Since then, a number of investigators have focused especially on division of labor as an important source of conflict (e.g., Boulding 1964; Pondy 1967; Schmidt and Kochan 1972; Smith 1966; Walton, Dutton, and Cafferty 1969). The roles and structures that bind organizations also are sources of conflict. This paper pursues this line of inquiry by examining role specialization, along with disagreement over goals and administrative control, as sources of occupational disputes within organizations. Our particular focus is on disputes among teachers in American public schools.¹

Elementary and secondary schools have some of the characteristics of Durkheim's ([1893] 1960) mechanical and organic systems, respectively. Research has consistently shown that *elementary* schools are small, technologically undifferentiated, structurally homogeneous, staffed with generalists, and based on consensus (Beck and Betz 1975; Firestone, Herriott, and Wilson 1984; Herriott and Firestone 1984). In contrast, *secondary* schools are larger, technologically advanced, structurally complex, more specialized, and characterized by disputes regarding organizational goals. Although elementary and secondary schools do not provide the full range between mechanical and organic systems, they offer a rare research advantage, since the variance of interest is confined to organiza-

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¹ In choosing occupational disputes as the dependent variable rather than using structural units, we reasoned that even conflicts that are

rooted in division of labor will not necessarily be confined within specific organizational units. Since division of labor legitimizes alternatives in organizations, its effects often spill over unit boundaries. For example, a worker can endorse a point of view promulgated by one department while being a member of another department. The decision to concentrate on conflict relationships among peers who compete over domains, resources, and rival philosophies was made to narrow the scope of the investigation. Yet, we realize that hierarchical conflict also may be associated with division of labor, because specialization introduces a competing basis of authority.

tions that have roughly the same function and operate within similar environments.

Scholars have conceptualized division of labor and related ideas in different ways. For example, Dewar and Hage (1978) distinguish between structural differentiation (measured by job titles, departments, and levels) and complexity (measured by number of occupations, level of training, and professional activity). While perhaps correlated, the measures are conceptually different. Yet, neither concept quite captures division of labor in the form we are concerned with here, namely, the extent to which workers concentrate on particular tasks. We refer to this as "role specialization." Our usage also differs from Lawrence and Lorsch's (1967, pp. 8-11) definition of structural integration, the similarity in cognitive and emotional orientation among managers in different functional units. We are not concerned with the social psychology of the participants, and different specialists need not be in different functional units. Our usage is especially applicable to division of labor within a class of organizations that are not highly differentiated by structural units, occupations, training, and job titles. It is particularly sensitive to the variation that exists within otherwise homogeneous elementary schools.

Some confusion exists about the relationship between division of labor and conflict. Focusing on role specialization as a form of division of labor and occupational disputes as a form of conflict, we offer a model to test three alternative hypotheses:

HYPOTHESIS 1. *Role specialization increases goal disagreement, which in turn leads to occupational disputes (the disorganization argument).*

HYPOTHESIS 2. *Role specialization increases interdependence, which in turn reduces occupational disputes (the interdependence argument).*

HYPOTHESIS 3. *Role specialization does not increase occupational disputes if administrative control is increased (the constraint argument).*

In the following sections, we consider in detail what is known about the causal path from role specialization to occupational disputes by reviewing several rival perspectives. We also discuss the possible interventions of two forms of administrative control (rules and centralization) and consider two potentially

important contextual variables (school level and size). A four-variable model is then introduced to guide the data analysis. Finally, we present and interpret the results of applying this model to 111 American public schools.

DIVISION OF LABOR AND CONFLICT

We organize the following review around issues pertaining to (1) alternative perspectives on the relationship between role specialization and conflict; (2) the mediating effects of the control structure; and (3) influences of the organizational context.

Role Specialization

As mentioned, at least three different propositions about the relationship between role specialization and conflict can be identified in the literature.

The disorganization argument. According to the disorganization argument, autonomy and uncertainty are inherent by-products of differentiation. Adding employees increases positions in the division of labor and adds more levels in the hierarchy of authority. Differentiation in turn creates four related coordination problems: (a) disagreement over goals; (b) development of autonomous units with distinctive objectives, dividing workers on the basis of their special interests (Gouldner 1959; Simon 1964); (c) more complicated linkages among units of organizations, thus increasing uncertainty about social boundaries (Crozier 1964; Dubin 1959; White 1961); and (d) greater opportunity for individual differences and clearer group identities, which then serve as targets for hostility (Gamson 1966).

Following this reasoning, various writers have proposed (Thompson 1961) and found (Darkenwald 1971) positive relationships between division of labor and various forms of organizational conflict. Corwin (1969, 1970) reported positive correlations between several measures of conflict in high schools and (a) the number of departments, programs, and echelons; and (b) the degree of teacher specialization. These relationships were accentuated in the more bureaucratic and more professionalized schools. However, we are unaware of studies that include a measure of goal disagreement along with measures of role specialization, administrative control

structures, and conflict. In their study of division of labor in American public schools, Beck and Betz (1975) noted that the presence of "incompatible goals" is a precondition for conflict, but they did not include a measure of goal disagreement. Hage and Dewar (1973) conducted one of the few studies of organizations that simultaneously included goal disagreement and features of organizational structure, but they wanted to explain the adoption of new programs, not conflict. Drawing on Child's (1973a,b) discussions, Pfeffer's (1977) typology distinguishes between the amount of control exercised by management, on the one hand, and disagreement on goals and level of technology on the other. However, he too was not concerned with conflict.

The interdependence argument. Durkheim's ([1893] 1960) model of organic solidarity suggests that division of labor promotes functional interdependence and contractual forms of cooperation that, by inference, minimize conflict.² Beck and Betz's (1975) study of American public schools reached conclusions consistent with Durkheim's theory. Using measures based on questions from Corwin's (1963, 1970) instrument, they found in secondary schools a negative relationship between conflict and specialization (a measure based on number of subjects and classes taught). In the elementary schools, specialization correlated negatively with conflict between strata but positively with conflict within strata.

However, several scholars doubt that division of labor constrains conflict (Blau 1977; Nisbet 1974), especially since Durkheim's model does not specify the mechanisms

necessary to bring about organic solidarity (Pope and Johnson 1983, p. 688). Durkheim's own discussion of organic solidarity emphasizes the importance of individuality and, at one point, concludes that individual interest is the only ruling force (p. 687). Therefore, the opposite conclusion, which we have already addressed, seems more compelling: specialized groups compete with one another, reducing, not enhancing, the solidarity of the whole (p. 684).

The constraint argument. Organizations may also be integrated through "enforced constraint" exercised by persons in authority (Dahrendorf 1958). Crozier (1964, pp. 156, 163) believes that hierarchies evolve because it is necessary to arbitrate among competing groups and individuals seeking to preserve and enlarge areas over which they already have some discretion. Such relationships are governed less by goal consensus and interdependence than by power differentials institutionalized within contracts and rules. Therefore, while division of labor promotes autonomy and erodes consensus, it also becomes the stimulus for formalized rules, centralized authority, and other forms of constraint.

However, whether occupational disputes can be controlled with routine administrative procedures is problematic, especially for occupations such as teaching that aspire to professional status. While rules and supervision can clarify problematic situations, they also intrude on workers' autonomy and so aggravate rather than suppress conflict in occupations with a claim to professional status. Therefore, efforts to control troubled situations may be ineffective, or they may intensify resistance and compound coordination problems (Corwin 1969; Hage 1980; Thompson 1961).

The Control Structure and Conflict

This section discusses the constraint argument, which is central to our analysis. We discuss and analyze two forms of formal control, centralized authority and rules. We also consider *patterns* of relationships between centralized authority and rules.

Centralized authority. George Simmel (1950, pp. 50-100) observed that large, segmented groups are possible only when special organs that assume responsibility for mediating complex relationships among the

² Durkheim was concerned with integration at the level of society not (as we are) with events within organizations, but we assume that a separate theory is not needed for each level of the social system. Pope and Johnson (1983) observe that Durkheim applied the concept of division of labor inconsistently to two levels of analysis: (a) relationships among units within the society; and (b) relationships among specialized individuals. The latter is our focus in this paper. Further, Pope and Johnson (p. 687) warn that previous studies of Durkheim's models typically have not measured the key variables and specified their causal connections (p. 688). While we do not claim to have resolved all of these basic issues, we have tried to clarify our assumptions, the variables in our model, and our rationale for including them.

component parts have been created. He regarded hierarchy as the fundamental property of organizations because of its capability to preserve unity in the face of differentiation. Mansfield (1973) concluded that a mild negative relationship exists between centralization and other bureaucratic variables, including specialization. Hage (1980, p. 68) concluded more emphatically that, with some notable exceptions, negative relationships between specialization and centralization have been reported with relative consistency. However, the relationship seems to vary with differences between task specialization and functional forms of specialization (Blau 1974; Durkheim [1893] 1960) and between routine and nonroutine tasks (Beyer and Trice 1979). Child (1973b, pp. 181–82) concluded that centralization can be maintained when specialists perform homogeneous tasks; only if functional areas themselves become internally specialized does decentralization occur. Hage (1980, p. 70) emphasized the importance of distinguishing between the sheer number of specialists and the variety of occupational groups. Since few distinct occupations are represented within schools, and since classroom teachers themselves perform relatively homogeneous functions, schools seem to approximate routine, homogeneous forms of specialization.

Hage (1980) showed that decentralization is associated with some forms of conflict. Corwin (1969, 1970) also found that decentralization was positively associated with routine forms of conflict, but negatively associated with extreme forms of strategic conflict. He concluded that as the frequency of conflict increases, its intensity declines (see also Hage 1980, p. 336). Also, by inference, decentralization is likely to be associated in different ways with organized group conflict and conflict among individuals (the concern of this paper).

Rules. Formalized rules are an indirect means of controlling behavior. Positive correlations have been reported between role specialization (and other forms of structural differentiation) and formalization (Child 1973b; Mansfield 1973; Beyer and Trice 1979). Rules can either support (a *reinforcement* pattern) or substitute for (a *compensatory* pattern) other forms of control (Corwin 1974, 1981, pp. 274–76). Thus, workers may be supervised more closely in organizations that are not highly formalized than in those that

are (Rushing 1966). But Anderson (1966) posited that the opposite tradeoff occurs in schools; since it is difficult to supervise teachers in self-contained classrooms, schools rely more heavily on rules.

Rules that reduce ambiguity will reduce conflicts that are exclusively due to misunderstandings, but when rules interfere with professional autonomy, they can contribute to conflict (Hage 1980, pp. 328–30; Organ and Greene 1981; Zeitz 1983).³ While rules do not necessarily minimize the decision-making power of a group, they often limit the group's choices or available discretion (Blau and Schoenherr 1971). Young (1970) suggested that if an otherwise autonomous group finds the rules restrictive, it will mobilize power to seek new rules that will help establish its authority over contested domains.

Given the strategic role played by rules in the conflict process (Crozier 1964; Gouldner 1954), division of labor in itself may be less important than the constraints likely to be imposed on specialists in connection with the difficulties of coordinating complex organizations. Conflict emerges when opportunities for autonomy ordinarily associated with role specialization are thwarted by rules and other types of control. If rules are not suspended to permit specialists who have gained some autonomy to exercise it freely, conflict is more probable (Katz 1968; Young 1970). Corwin (1969, 1970) found that high schools having the most complex division of labor stressed rules and also exhibited high rates of conflict between teachers and administrators. Darkenwald (1971) found higher rates of conflict in colleges where neither professional nor administrative authority dominates than in colleges where one is clearly dominant. The mixed authority-constraint pattern in the former simultaneously promotes both administrative rules and claims to professional autonomy.

Rules and centralized authority. The evidence concerning relationships between for-

³ This proposition is subject to two qualifications. First, close supervision and formalization might be simply responses to conflict. Second, as the concept "strategic leniency" (Gouldner 1954) implies, constraints are seldom constant and uniform throughout an organization. Indeed, lax enforcement of some rules, for example, can be tolerated only if others are consistently enforced (Katz 1968).

malization and centralization is ambiguous. Blau (1970a, pp. 151–52) reported that formalization is accompanied by decentralization in government agencies. He saw the two variables as alternative (compensatory) ways to limit discretion; if one is present, there is less need for the other (see also Child 1973b). Mansfield (1973, p. 488) echoed Blau and Schoenherr's (1971, p. 120) view of rules as permitting managers to delegate without relinquishing control. This suggests a tradeoff in which rules *compensate* for the loss of control associated with delegation. However, Hage and Aiken (1967) found a *reinforcement* pattern in social-welfare agencies; there was a weak positive correlation. Finally, Meyer (1979, pp. 159, 177) found no direct correlation, but concluded that rules promote hierarchical differentiation, which, in turn, leads to decentralization. We are persuaded by Blau and Child, who argue for a compensatory relationship.

The compensatory pattern is probably contingent on other conditions. Therefore, it is advisable to keep in mind the circumstances of American public schools. For example, Hage (1980) believes the relationship is positive when the persons performing specialized roles have been trained as generalists; most teachers are trained as generalists. In addition, the routinized form of specialization characteristic of teaching seems to invite both forms of control. Perhaps most important, however, is the stormy history of lay control over education in this country (Corwin 1965). In an environment of goal conflict, public pressures limit teachers' discretion over the socialization process (Miles 1981). Centralized decision making and formalization can help satisfy demands for administrative accountability.

Control structure as an intervening variable. We use a theoretical model that reflects our interpretation of the existing literature on organizations staffed by professionals generally and schools in particular. This model assumes that occupational disputes are an inherent quality of complex organizations and that even though conflict may involve individuals, it is promoted by parameters of organization. Three types of organizational variables figure prominently in the literature on organizational conflict: role specialization, goal disagreement, and administrative control structure (e.g., centralization and/or rules). The model stipulates that *control structure*

(centralization and/or rules) intervenes between *role specialization* and *occupational disputes*, and also between *goal disagreement* and *occupational disputes*.

Our rationale can be summarized as follows. Role specialization is a source of divisiveness; it not only provokes disagreement about goals but also promotes control to minimize conflict. We ask whether control is effective in curbing conflict or whether some patterns of control exacerbate it. For schools, both role specialization and goal disagreement are considered to be related to two other variables that may contribute independently to occupational disputes, namely, organization size and school level.

The Context: Some Basic Assumptions

Organization size and scope of undertaking are relevant contextual variables in the study of schools. Size is generally included in analyses of structural variables, and we are convinced that, for American public schools, *school level* (an indicator of scope of the undertaking) plays an important antecedent role in explaining occupational disputes. Although (for reasons to be explained) neither variable is included in the model to be tested, they cannot be ignored.

Organization size. Kemper (1972) complained that division of labor has not received the attention it deserves. However, a large literature has accumulated during the past 15 years that treats division of labor as a product of organization size. Both Simmel and Durkheim observed that, as the group membership increases, relational complexity intensifies to a point where differentiation will occur. Simmel said more specifically that, as group membership increases, cliques and subgroupings form to preserve face-to-face contacts. Durkheim emphasized further the efficiencies that accrue from division of labor. Several studies reported that size is highly correlated with specialization, formalization, decentralization, and other structural variables (Child 1973b, p. 171; Pugh, Hickson, and Hinnings 1969). Kimberly (1976) found that, among studies that have addressed the causal significance of size, most treat it as causally prior to other structural variables (e.g., Meyer 1972, 1979; Blau 1970b, p. 204, 1973; Blau and Schoenherr 1971).

However, the causal importance of size has been questioned (Haas, Hall, and Johnson

1966), especially for certain types of organizations (Kimberly 1976, p. 575; Milet, Gillespie, and Haas 1977). As others have noted (see especially, Slater 1985), it is more reasonable to assume that the number of members required to do a job depends on the scope of the undertaking and how it has been organized. As Slater observed, organization size can be treated as the cause of differentiation only if an evolving, crescive organization is assumed. However, if one assumes an existing organization that has been deliberately planned, size is simply a correlate of division of labor and therefore of little causal importance. For schools in particular, as the school-consolidation movement in earlier decades demonstrates, upper and lower limits on size are predetermined consistent with preferred levels of complexity (see, for example, Conant 1959). In the work of Beck and Betz (1975) cited above, size is preempted by strong associations between school level and the consequent variables. Therefore, we believe organization size is not an important causal variable, even though (as described below) large schools serving older students tend to be more specialized than smaller ones serving younger students.

School level. If size does not determine division of labor in American schools, what does? We propose that it is *scope of the undertaking*, or the variety of tasks (Dewar and Hage 1978; Lefton and Rosengren 1966). As scope increases, it is necessary to rely on more specialized roles. In schools, scope of undertaking traditionally has been closely associated with the *age of the students* being served. This variable is logically prior to division of labor because students are not tracked into differentiated programs and specialized courses until they have reached at least junior-high age, and specialized curricula are not offered until the secondary level. While scope is associated with size, both are determined by political and cultural considerations (Child 1973a; Freeman and Hannan 1975; Freeman 1979; Hinnings and Foster 1973). Fiscal constraints and values and beliefs about socialization practices all enter the causal mix. For example, parents want small neighborhood schools for young children so they can stay better informed about the critical early socialization process. Teachers can maintain closer supervision over pupils in small classrooms and small schools nested within larger district organizations. As

children mature, they are expected to become more independent from the family, and, moreover, their learning emphasis shifts from socialization to specialized subject matter (Parsons 1959). They can travel farther from home to larger schools. Close supervision can be relaxed and efficiency considerations become more salient. Division of labor starts to reflect more explicitly the structure of knowledge and beliefs about appropriate learning sequences. In short, division of labor is primarily the product of scope of the undertaking, which is determined in schools by student age, not by organization size.

Although organization size and school level have not been included in the causal model, we omitted them for different reasons: school size because we are convinced that it is not causally prior to role specialization; school level because it is too highly correlated with role specialization to permit path analysis. However, we included both variables in an analysis documenting some of the assumptions just discussed.

Implications

Durkheim's contention that self-interest will be supplanted by mutual interdependence is unconvincing. He himself saw contemporary society as relatively unintegrated and plagued with disagreement (see Pope and Johnson 1983). Yet, what is provocative about Durkheim's work is not his implausible arguments on behalf of organic solidarity, but his compelling insight that the consequences of division of labor cannot be understood without taking into account its (a) effects on the level of disagreement in the system (see Kriesberg 1973, pp. 28-41); and (b) reliance on administrative controls, such as centralized authority and rules. The question we pursue is whether division of labor can indirectly contribute to social integration by promoting formalized types of control, such as rules and centralized authority. Can such external constraints compensate for disagreement over goals and individual and group autonomy? There is reason for skepticism. We are more persuaded by the positive associations reported in the studies cited above between the use of rules and organizational conflict. Even Durkheim seemed to suggest that formal types of control are relatively less effective than consensual solidarity.

DATA ANALYSIS

To test the model presented above, we have used data collected by Wilson, Firestone, and Herriott (1985).

The Sample

The data come from two comparable samples of American public schools. The first, with 50 schools, is a random sample selected in 1981 from a population of 1,407 schools within a 15-county region of southeastern Pennsylvania. The second sample contains 61 schools. It was drawn less systematically in 1982 from a collection of schools in Pennsylvania and New Jersey that volunteered to receive management training from Research for Better Schools, Inc., a regional educational laboratory. The two samples include 59 elementary and 52 secondary schools. All teachers with at least one year of experience in their current school were asked to complete a questionnaire in a group setting within each school. Slightly over 85 percent of the eligible staff in the 111 schools provided usable data. In all, 3,292 teachers and 111 principals were surveyed.

To determine whether the volunteer schools are substantially similar to the 50 randomly selected ones, a Box (1949) test of the equality of covariance was computed for five variables relevant to our analysis. Since the resulting *M*-value was not statistically significant at below the .05 level, the two samples were considered equivalent and pooled to take advantage of the larger sample size.⁴

Measurement Procedures

The teachers and principals were asked to serve as informants about a battery of organizational data that included measures of the four variables in the model. In this section

the operational measure of each variable is introduced.

1. *Role specialization.* The routinized form that division of labor takes in organizations where few occupations are represented and where the dominant occupation performs relatively homogeneous functions is called role specialization. The role-specialization score represents the proportion of professional staff in each school who are subject-matter specialists. It was obtained by asking each teacher to distribute his or her weekly professional time among 20 distinct subject-matter areas. All teachers who devoted at least 60 percent of their time to a single subject-matter area were counted as specialists. The role-specialization score measures the percentage of teachers in a school who are specialists. It can range from 0 (a school where no teachers are specialists) to 100 (a school where all of the teachers are specialists). While secondary schools are likely to score higher on this measure, variation is expected among both elementary and secondary schools.

2. *Goal disagreement.* The absence of shared beliefs is at least crudely reflected in the degree of disagreement within a school on goals. The following seven "areas of student development" were ranked by each teacher on the basis of "How important are they to you as a member of this school?"

- a. appreciating and striving for excellence
- b. critical and original thinking
- c. basic skills
- d. respect for authority
- e. vocational understanding and skills
- f. understanding others
- g. self-esteem

Disagreement was measured by computing Kendall's coefficient of concordance (*W*) across the teacher rankings within each school. This statistic is an extension of Kendall's rank coefficient (*tau*), with *W* representing the commonality of judgment for all observers. The computation of *W* produced a single goal *agreement* score for each school ranging from 0 to 1. This score subtracted from unity was used as our *goal disagreement* score.

3. *Control structure.* Organizations are controlled in numerous ways, including centralization, formalization, professional norms, laws, and informal mutual feedback. Hage (1980, pp. 375-76) has observed that

⁴ We performed this test for the six variables presented in Table 2 to consider the research hypothesis that the covariance matrices for the two samples are from a common population. However, because rule dominance is a linear combination of centralized authority and formalized rules, it was not included in the test. The *M*-statistic resulting from a comparison of the two five-variable covariance matrices yielded an *F*-ratio of 0.99 (with 15 and 43,939 degrees of freedom), having an exact probability of .46.

these control mechanisms are typically mixed in complex patterns. The literature suggests that it is more important to understand *patterns* among alternative forms of control than to concentrate on specific variables in isolation, even though most of the literature discusses one variable at a time. Ideally, we would have preferred to include a wide variety of controls, but we had to be selective. Therefore, we have chosen two fundamental types of administrative control to illustrate the pattern approach, namely, centralized authority and formalized rules. In addition to measuring these two variables in absolute terms, a measure of their relative priority was constructed, which we refer to as *rule dominance*.

A. *Centralized Authority*. Most studies of power in schools conclude that it is highly dispersed (Miles 1981) and exercised within segmented "zones" of authority (Lortie 1969). As a proxy for power, centralized authority was measured by subtracting, in each of the following four decision areas, (a) each teacher-informant's report of the power of the teachers from (b) their estimate of the corresponding power of the principal:

- a. selecting required texts and other materials
- b. establishing objectives for each course
- c. determining daily lesson plans and activities
- d. determining concepts taught on a particular day

Within each school, the resulting difference scores were averaged, first across informants and then across the four decision areas. The resulting centralized-authority score could range from a high of 6 (principal exercises total control) to 0 (principal exercises none). Since the unit of analysis is the school, this measure is exclusively concerned with classroom-level decisions in the academic domain. It is not designed to assess where system-wide decisions, such as hiring policies, are made.

B. *Formalized Rules*. The presence of formalized rules was measured by asking each teacher-informant two questions about the following three policy areas:

- a. lesson plans
- b. curriculum guides
- c. arrival and departure times for teachers

For each area it was first determined whether a policy existed, and if it did, respondents were asked about the degree to which it was enforced. By combining the two answers for each policy area, we created a formalized

rules score that could run from 0 (no rule in any of the three policy areas) to 5 (a rule in each area that is always enforced). Given the extensive body of rules that governs most schools, this three-item measure must be regarded as only a crude indication of the actual salience of rules. However, there is precedent for using a modest indicator (see Meyer 1979), and the three items selected represent fundamental dimensions of behavior in schools. Indeed, the absence of rules in these areas would have a very significant effect on the structure of a school. The first two intrude into the sanctity of the classroom, and the third challenges teachers' claim to professional autonomy.

C. *Rule Dominance as a Form of Control*. As noted in reviewing the literature, although control structures may in part be designed to reduce conflict, different control mechanisms are often empirically related to conflict in different ways. Therefore, one could arrive at different conclusions, depending on the particular form of control being considered. For example, conflict may be positively associated with rules but negatively associated with centralization. To tap this element of patterning, we devised a discrepancy measure to assess the priority given to rules compared to the priority of centralization.

We computed the difference between our measures of formalized rules and centralized authority by first standardizing both variables and then subtracting the centralized-authority score from the formalized-rules score. The resulting discrepancy score reflects the degree to which these alternative forms of control are used in a *compensatory* fashion, that is, the emphasis a school places on rules *relative* to centralization. This measure of the signed difference between these two variables will help to determine whether a tradeoff that favors rules over centralization results in more or less conflict.

4. *Occupational disputes*. Adversarial relationships between two or more members of an occupation in which one designs to control some aspect(s) of the other's work (cf. Mack and Snyder 1957) are a form of interpersonal conflict. They are by-products of a power relationship that materializes when one party actively interferes with the actions of another, and when such interference is resisted. Occupational disputes thus defined are to be distinguished from tensions associated with such normative inconsistencies as role conflict and goal disagreement (considered above), both of which can be preconditions for

conflict. Our measure of occupational disputes is derived from the reports of teachers about the frequency of disputes within schools concerning:

- a. The retention of a textbook
- b. The teaching of controversial materials
- c. Student dress or appearance
- d. Student moral behavior
- e. The need for administrative support for handling pupil behavior
- f. The hiring or dismissal of a teacher
- g. Teacher participation in nonteaching duties
- h. Issues related to "red tape" or paper work

Each teacher-informant was asked to indicate on a six-point scale how frequently each type of dispute had occurred among teachers in their schools during the past twelve months. Possible responses could range from "never" (coded as 0) through "almost never" (1), "occasionally" (2), "frequently" (3), and "almost always" (4) to "always" (5). We computed an occupational-disputes score for each school by averaging across all informants for a given type of dispute within a given school and then across the eight types of disputes within that school.⁵

Documenting Some Basic Assumptions

To explore our assumption about the importance of *scope of the undertaking* as a determinant of both organization size and specialization, we computed mean size and mean specialization by school level. The size

of a school was determined by its student enrollment as reported by the principal. To measure school level, each school was arrayed according to the lowest and highest grade it contained and assigned to one of four levels:

Level 4: either 7-12, 9-12, or 10-12 grade spans

Level 3: 5-8, 6-8, 7-8, or 7-9 grade spans

Level 2: K-6, 1-6, or K-8 grade spans

Level 1: K-3, K-4, or K-5 grade spans

These four levels are more sensitive to subtle age/grade differences than the traditional dichotomy between elementary (levels 1 and 2) and secondary (levels 3 and 4) schools.

The results using one-way analysis of variance across the four levels are consistent with those reported by Beck and Betz (1975), who found that secondary schools are larger and more specialized than elementary ones. As our measure of school level rises, mean size rises uniformly (from 351 to 1,219 students; see Table 1a). The percentage of teachers who teach primarily in a single subject-matter area also rises (from 23.7 to 86.4), but in this case (as Table 1b shows) there is a distinct break between levels 2 and 3 (28.0 versus 85.7 percent).

However, while school level is theoretically important, the high zero-order associa-

Table 1. Organization Size and Role Specialization by School Level

a. Organization Size (as measured by pupil enrollment)			
School Level	Mean	s.d.	N
1	351	116	28
2	450	214	31
3	705	233	23
4	1,219	557	29
All schools	679	474	111
<i>F</i> -ratio = 40.2 (d.f. = 3,107)			
Eta-squared = .530 ($p < .05$)			
b. Role Specialization (as measured by the percentage of teachers who teach primarily in a single subject-matter area)			
School Level	Mean	s.d.	N
1	23.7	13.3	28
2	28.0	15.5	31
3	85.7	11.3	23
4	86.4	12.1	29
All schools	54.1	32.9	111
<i>F</i> -ratio = 189.1 (d.f. = 3,107)			
Eta-squared = .841 ($p < .05$)			

⁵ Since the unit of data (an individual teacher) is different than the unit of interest (the school), we used a one-way analysis of variance (using school as the main effect and the teacher as the unit of analysis) to assess the appropriateness of aggregating these responses about disputes from the teacher to the school. The resulting Eta-squared coefficients (measuring the proportion of the total variance in teacher reports accounted for by schools) for these items ranged from .11 to .19, all of which are statistically significant at below the .05 level. We concluded that the report of the average teacher within each school about each dispute would be a valid estimate for the school. Prior to averaging the reports of the average teachers across the disputes, we used a reliability test to examine the compatibility of the items (Cronbach 1952). It yielded a highly satisfactory Alpha coefficient of .86. (We used similar procedures to measure centralized authority and rules. Their reliability coefficients are .83 and .71, respectively.)

Table 2. Zero-order Correlation Coefficients, Means, and Standard Deviations For Six Variables ($N=111$)

Variable	Variable						Mean	s.d.
	1	2	3a	3b	3c	4		
1. Role specialization	—	.799*	-.628*	-.066	.514*	.482*	54.1	32.90
2. Goal disagreement		—	-.657*	-.133	.478*	.508*	0.64	0.15
3a. Centralized authority			—	.400*	-.549*	-.280*	1.54	0.43
3b. Formalized rules				—	.547*	.157	3.58	0.70
3c. Rule dominance					—	.399*	-0.01	1.09
4. Occupational disputes						—	1.24	0.39

* $p < .05$ (two-tailed test).

tion between school level and role specialization ($\text{Eta-squared} = .841$) suggests that including both variables in the same regression equation would produce excessive collinearity. Therefore, school level has not been included in the path analyses to follow, and since we are convinced size is not temporally prior to role specialization in American schools, it was omitted as well. However, some empirical evidence about the possible causal effects of organization size is reported in note 7.

Testing Causal Hypotheses

Table 2 presents the Pearsonian correlation coefficients, means, and standard deviations essential to a causal analysis of the model introduced earlier. Through a multiple-regression approach to path analysis, the measures were used in two stages. First, we tested a fully identified recursive model involving only role specialization, goal disagreement, and occupational disputes. We then expanded the analysis to four variables by testing in turn for the possible intervention of centralized authority, formalized rules, and rule dominance.

Role specialization, goal disagreement, and occupational disputes. The hypothesis that, within schools, occupational disputes are produced by role specialization receives strong support. In addition to affecting disputes directly, it operates indirectly through its effect on goal disagreement. All of the relevant path coefficients are positive and statistically significant (Figure 1).⁶

Control structure as an intervening mechanism. We next wanted to know whether the control structure alters the relationships in Figure 1. Three alternative measures of

control were considered: centralized authority, formalized rules, and rule dominance. Although centralized authority is associated with both role specialization and goal disagreement, it is not significantly related to occupational disputes (Figure 2, part a). In contrast, formalized rules contributes to occupational disputes, but this variable is not related to either role specialization or goal disagreement (Figure 2, part b). Only in the case of rule dominance are the essential conditions of a four-variable model met. Role specialization leads to the dominance of rules over centralized authority, which in turn leads to occupational disputes. Further, role specialization also leads to goal disagreement, which in turn leads to occupational disputes (Figure 2, part c).⁷

DISCUSSION

We started this analysis suspecting that

⁷ The statistically significant paths presented in Figure 2, part c, are unaffected by organization size. On theoretical grounds, we did not feel compelled to include this context variable in our formal test of the causal model, but in deference to the importance often attributed to this variable in the literature, we have attempted empirically to document our argument. To do so, we have computed the relevant path coefficients for a model that assumes organization size (measured by the natural logarithm of pupil enrollment) to be cotemporal with role specialization. The crucial path coefficients in Figure 2, part c, change very little (from .18 to .17; .36 to .35; and .31 to .26). The only statistically significant effect of introducing size is to reduce the path from role specialization to goal disagreement from .80 to .61. From our perspective, this is attributable to the presence of a statistically significant path coefficient between organization size and goal disagreement of .29. Thus, any potential causal disturbance from organization size is confined to its effects on the association between role specialization and goal disagreement.

⁶ The criterion used for statistical significance is the .05 level (one-tailed test).

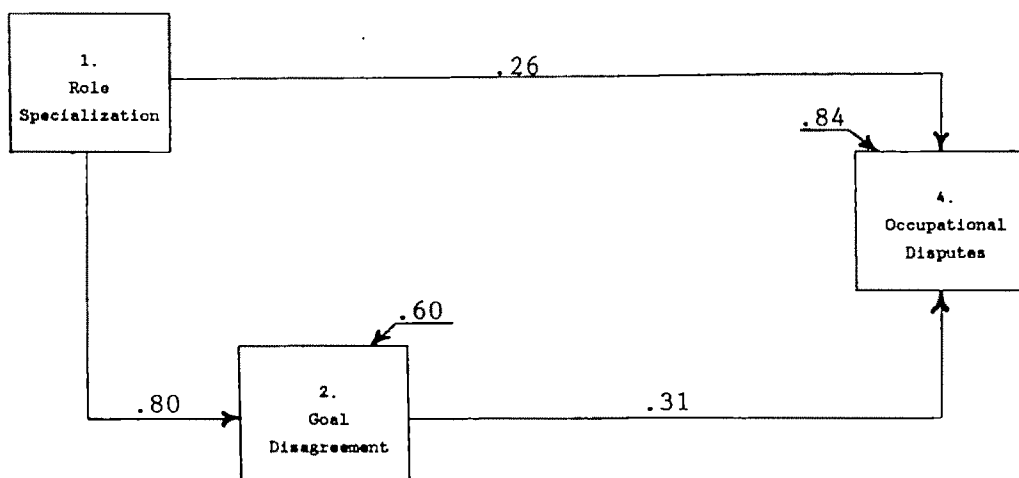


Fig. 1. Statistically Significant Path Coefficients Within a Fully Identified Three-Variable Recursive Model

division of labor contributes to occupational disputes in organizations. We conclude that it does, but not directly. In the simplified model, role specialization did appear to be directly associated with occupational disputes. However, in more stringent tests, with control-structure variables in the model, role specialization affects disputes indirectly by contributing to rule dominance, a particular form of control in which an organization relies more heavily on formalized rules than on centralized authority (Figure 2, part c). Role specialization also affects disputes indirectly in another way, through its connection with goal disagreement.

Why is goal disagreement directly connected to disputes, while role specialization operates only indirectly? We speculate that the difference has something to do with the coordinating function of control structures. Since they are designed to coordinate division of labor, the effects of role specialization are channeled through the control structure. Disagreement on goals, by comparison, reflects the latent culture, a product of society that is only remotely connected with the formal division of labor.

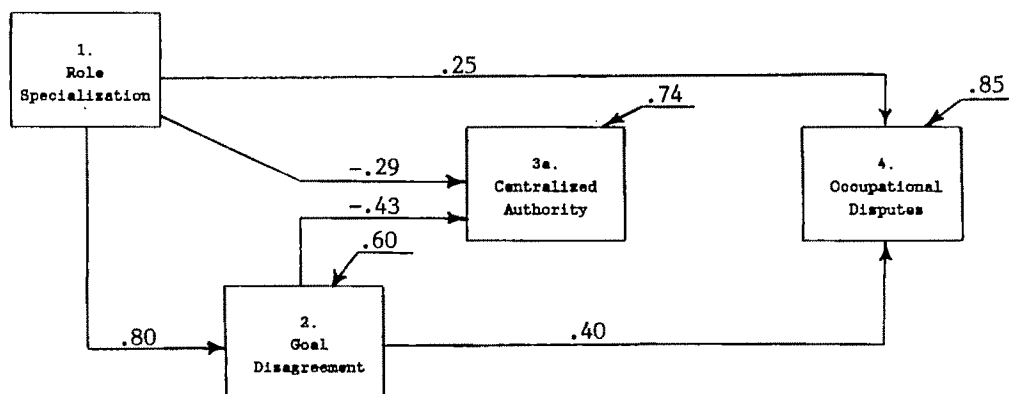
Returning to the three arguments about the relationship of division of labor to occupational disputes, we have found support for the first proposition (the disorganization argument). Goal disagreement is directly related to occupational disputes. The fact that role specialization is positively correlated with occupational disputes is inconsistent with the second proposition (the interdependence argument). Although we did not explicitly measure changes in interdependence, role special-

ization does not suppress either administrative control or occupational disputes, as implied by the interdependence thesis. On the contrary, specialization indirectly contributes to occupational disputes by increasing rule dominance.

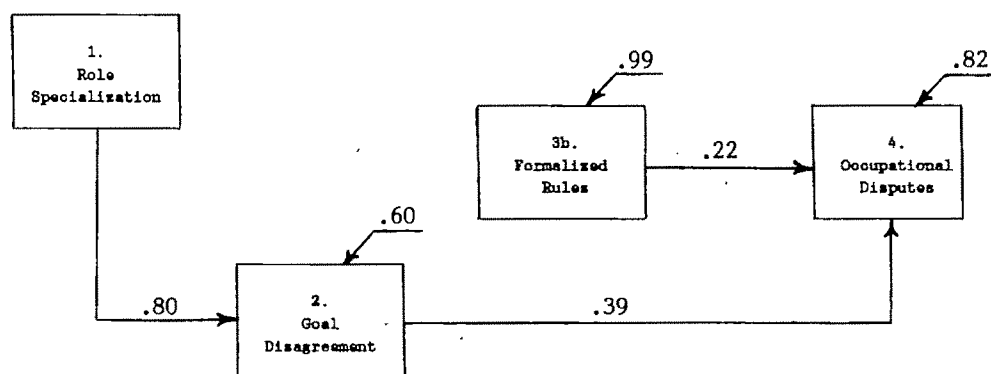
While the third proposition (the constraint argument) is not supported in the form stated, it is the most relevant to our search for a causal link between role specialization and occupational disputes. Specifically, role specialization does promulgate greater control, in the form of rule dominance. However, this constraint leads to more, not fewer, occupational disputes. We conclude that, far from being an integrating force, as Durkheim had proposed for the social system as a whole, schools, division of labor indirectly contributes to occupational disputes. This occurs partly because of its adverse effect on goal consensus and partly because it promotes the priority of rules over centralization, a pattern that is positively associated with conflict.⁸ The presence of specialists suppresses one form of control (hierarchy), but leads to its replacement by another (relatively greater reliance on formalized rules).

In addition to testing the above hypotheses, we documented our assumptions about the organizational context applicable to our sam-

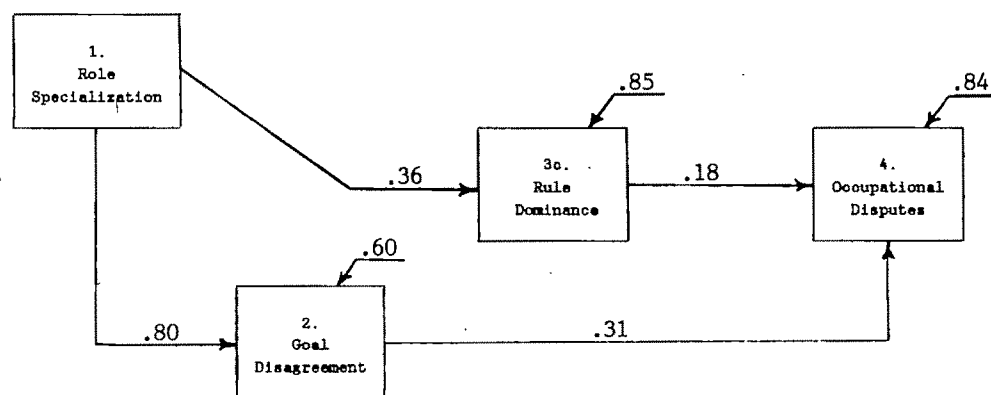
⁸ Our assumptions about the direction of causality are, of course, largely undocumented. For example, it is conceivable that formalized rules are a response to occupational disputes as well as a potential cause of them. We have not considered all possible alternatives, particularly those involving nonrecursive models.



a) Centralized authority as the measure of control.



b) Formalized rules as the measure of control.



c) Rule dominance as the measure of control.

Fig. 2. Statistically Significant Path Coefficients Within Three Alternative Fully Identified Four-Variable Recursive Models

ple of American schools. We argued that, at least for schools, size should not be treated as a causal variable, as it has often been in other research on division of labor. Data were presented consistent with our assumption that

scope of the undertaking, as reflected in school level, is antecedent to both organization size and role specialization for the reasons stated. However, to avoid potential problems associated with multicollinearity,

school level was not included when we tested the causal models.

We have measured only one form of conflict—disputes among teachers about their work roles. Conceivably, our conclusions might have been different if group conflict had been considered, for example, conflict between teachers representing the interests of different grade levels or subject-matter departments. Moreover, the role of unions in structuring conflicts among teachers was not considered. In addition, we have not tried to control for teacher background characteristics in the analysis. Although properties such as race, gender, and education might have influenced the outcomes, in this paper, we have chosen to concentrate on structural-level variables.

IMPLICATIONS

While this study has focused primarily on conflict, it is equally a study of social integration. From the latter perspective, the pattern of correlations in Table 2 is puzzling. The more specialized schools are also the ones with the higher levels of goal disagreement ($r = .80$) and more occupational disputes ($r = .48$). Yet, they are also decentralized, and there is no evidence of strict discipline in the form of rules. Our measures are admittedly primitive, but the data nonetheless force us to ask what accounts for social integration in situations where there is a high potential for disagreement on goals, but where administrative controls do not suppress it (see also Corwin 1981).

Integration within a social system can be accounted for in a variety of ways, including: (1) shared goals and values; (2) enforced constraint; (3) implicit or explicit social contracts; (4) functional interdependence; and (5) cross-cutting or weak ties associated with patterns of interaction. We have tried to measure only aspects of the first two of these, and our measures are necessarily incomplete. For example, we have not considered rules sanctioned by the larger society and the taken-for-granted, widely shared myths that form the basis of mutual trust (Meyer and Scott 1983). Nor did we take into account professional norms, especially their potential impact on goal consensus. The effects of disagreement and conflict can be minimized when the people involved share deeper values, beliefs, and norms.

Our measures of constraint do not include control exercised by sources external to the organization, for example, laws and political and social pressures. We measured neither contractual agreements among individuals acting in their own interests or in those of a union, nor functional interdependence, based on impersonal relationships among units of an organization where the output of one becomes the input to another. However, we know that people agree to disagree as part of tacit and formal contracts from which they derive some advantage by cooperating (Barnard 1938).

Finally, we did not attempt to measure either the common identities that members of an organization develop through both cross-cutting relationships or more abstract forms of identification (Blau 1977, p. 128). Teachers who vehemently disagree about whether it is appropriate to use corporal punishment are simultaneously members of the same nation and community, may have attended the same colleges, participate in the same events, and become excited and distraught over the same national and international crises. Thus, it would be desirable in future research to include measures of group affiliations in the model. Granovetter (1973) observed that social cohesion depends on many weak ties among people who belong to cross-cutting groups. Blau (1977) noted that although heterogeneity creates barriers to social intercourse, heterogeneity itself paradoxically also weakens the barriers, because the chances are that fortuitous, casual contacts among members of different groups will increase as heterogeneity increases. Blau and Schwartz (1984) reported that multiple group affiliations reduce the salience of any one group membership; membership in many groups forces people to associate with a wide range of other people who are members of still different groups. Moreover, when role specialization requires more specialized education, there is greater likelihood that members of different occupations will share other interests because of similar levels of education and life styles.

But while cross-cutting, weak bonds may help hold the social fabric together, they also precipitate frequent occupational disputes both within and across group boundaries. Blau (1977, p. 113) stated it as follows:

When groups and strata remain far apart, there is less chance of friction in the form of interper-

sonal conflict among the members, but society is fragmented, and the great social distances are likely to be (come) manifest in severe conflicts of interests which erupt intermittently in overt group or class conflicts. Comparatively frequent interpersonal conflict is the price of social integration in a diverse society.

Corwin's (1969) study supports the pattern Blau describes: situations in which the incidence of major conflicts was low had high rates of routine disagreement, and vice versa. It concluded that social structures generate conflict in one form or another. Conditions that facilitate the expression of minor disagreement can also prevent it from erupting into more rancorous incidents. In our study, we were unable to distinguish between routine conflicts, which can be accommodated within the prevailing normative system and the more disruptive, strategic conflicts capable of altering structures. Nor have we distinguished between conflicts based on structural divisions and other forms of alignments. Therefore, while our data do not support Blau's proposal that division of labor minimizes conflict as we have measured it, it is possible that more elaborate divisions of labor support patterns of interaction across group boundaries and/or overlapping memberships that thwart major, strategic forms of conflict not represented in this study.

Therefore, further research is needed on potential consensus-building forces such as cross-cutting interaction patterns, social contacts and structural isolation, the age of the organization, community stability, longevity on the job, similarity of social and educational backgrounds, committees and other work group structures, and solidarity of worker organizations, any of which may counteract some of the disruptive aspects of role specialization we observed. In addition, it would also be instructive to study intensively the consequences of conflict, since conflict can promote integration through the compromises that are reached (Coser 1956).

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EXPLAINING OCCUPATIONAL SEX SEGREGATION AND WAGES: FINDINGS FROM A MODEL WITH FIXED EFFECTS*

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Does segregation arise because "female" occupations have financial advantages for women planning to spend some time as homemakers, as human-capital theorists claim? Do "male" occupations have more onerous working conditions that explain their higher earnings, as the neoclassical notion of "compensating differentials" suggests? Or do female occupations have low wages that are depressed by the sort of discrimination at issue in "comparable worth," as sociologists have argued? To answer these questions, we use a model with fixed effects to predict the earnings of young men and women from a pooled cross-section time-series of the National Longitudinal Survey. Analyses are undertaken for both blacks and whites. A fixed-effects model is useful for answering these questions because it corrects for the selection bias that results from the tendency of persons who differ on stable characteristics that are unmeasured but affect earnings to select themselves into different occupations. We find little evidence that female occupations provide either low penalties for intermittent employment or high starting wages, the advantages human capital theorists have argued them to have. Rather, there is evidence of pay discrimination against men and women in predominantly female occupations. Implications for economic and sociological theories of labor markets are discussed.

INTRODUCTION

In this paper we use a model with fixed effects to test whether predominantly female occupations have advantages that compensate for their lower average wages. Sociologists and economists disagree about the explanation of both occupational segregation and the low pay of female jobs. In a strict neoclassical view, female jobs possess certain advantages—at least for those who plan interrupted employment or who prefer work typically done by women. These include higher starting wages, lower depreciation of human capital while not employed, and more pleas-

ant working conditions. A sociological view contends that female jobs have uncompensated disadvantages: lower wages than male jobs with an equivalent requirement for education, experience, skill, and working conditions. Discrimination, socialization, institutional practices, and feedback effects among these perpetuate occupational segregation and uncompensated wage differentials. We test these economic and sociological views using methods with several attractive features: longitudinal data spanning more than a decade; a fixed-effects model that nets out effects of all unchanging but unmeasured personal characteristics; a Heckman-style correction for sample selectivity; controls for occupational characteristics from the Dictionary of Occupational Titles; and separate analyses for black women, black men, white women, and white men.

The Neoclassical Economic View

The neoclassical economic view explains occupational or pay differentials between individuals or groups by differential human-

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capital investment, or by differential choices in the tradeoff between pecuniary and nonpecuniary job rewards.

Explaining Segregation. Zellner (1975) and Polachek (1979, 1981, 1984, 1985) pioneered the application of neoclassical theory to explaining occupational segregation. They take the assignment of childrearing to women as given and exogenous to their models. They suggest that women who plan intermittent employment will maximize lifetime earnings if they choose occupations with low rates of appreciation and depreciation of human capital.

Appreciation of human capital refers to formal or informal on-the-job training that makes a worker more productive and leads to wage growth. Other things (such as education) being equal, jobs that provide more on-the-job training will have lower starting salaries, making employees "pay" for their training (Becker 1975). If there is a tradeoff between starting wages and wage growth, women planning a short employment duration will choose jobs with higher starting wages despite their low wage growth (Zellner 1975).

Human-capital theory asserts that those who plan more years of employment will choose jobs with the highest returns to experience. Because on average, men anticipate more job experience than women, women will select occupations with higher starting wages but smaller returns to experience. This would lead occupations with these characteristics to become disproportionately female. Yet, findings have been mixed on the question of whether predominantly female occupations are characterized by lower wage growth than are male occupations (Corcoran, Duncan, and Ponza 1984, p. 183; England 1982, 1984, p. 735 and note 9).¹ But no

analysis has found the higher starting wages in female occupations that the theory predicts; to the contrary, starting wages are lower in female than male occupations requiring the same education (Greenberger and Steinberg 1983; England 1984).

Indirect tests of the hypothesis have yielded conflicting results. If segregation results because women who plan less employment choose jobs with higher starting wages and lower appreciation, those who plan more continuous employment should be more likely to choose male occupations. Waite and Berryman (1985) found that high-school girls who planned more years of paid employment were more likely to aspire to a male occupation. On the other hand, disconfirming evidence is reported by Lehrer and Stokes (1985), who found that whether young women plan to be employed or at home at age 35 had no effect on their choosing a male occupation.

The economic approach to segregation has also focused on the *depreciation* of human capital. Polachek (1979, 1981, 1984, 1985) argues that it is advantageous for women who intend spells at home to choose occupations with low rates of such depreciation. Depreciation refers to skill atrophy leading to a reduced real wage upon return to paid employment from homemaking. Since most men plan continuous employment, they have little incentive to choose occupations with low depreciation. Polachek concludes that sex differences in plans for employment continuity lead to sex differences in the job choices that maximize men's and women's lifetime earnings. Past research has not confirmed the most obvious prediction from Polachek's thesis—that predominantly female occupations offer lower depreciation rates during home time than do male occupations (England 1982, 1984; Corcoran et al. 1984).

Explaining Occupational Pay. Neoclassical economic theory predicts that occupations requiring greater human capital will pay better. Thus, if female jobs pay less, this may reflect their lower skill demands. But some-

¹ Using longitudinal data, Corcoran et al. (1984) found higher percentage wage growth in male occupations for white women, but not black women. Using cross-sectional data, England (1984, p. 743) found a higher dollar return per year of experience in male occupations, but not a higher percentage rate of return to experience. Both these analyses hold the sex of individuals constant while estimating how returns to experience vary by the sex composition of occupational categories. Yet much segregation is hidden within the occupational categories used in these analyses (Bielby and Baron 1984). One could take the finding that men have higher overall returns to experience than

women (Corcoran and Duncan 1979) as indirect evidence that, if we used more detailed job categories, we would find that male jobs offer steeper wage growth than female jobs. According to Corcoran (1979), this is because men are in occupations providing greater on-the-job training. It may also be a form of wage discrimination.

times occupations requiring comparable skills differ in pay, even after temporary disequilibrium from shortages or gluts are remedied. Economists explain this with the notion of "compensating differentials." Jobs involving unpleasant working conditions must pay premiums to be filled, whereas jobs that are intrinsically satisfying can be filled for less. However, a wage premium will be unnecessary if sufficient people prefer or are indifferent to the job characteristics in question that the job can be filled without a higher wage to compensate for the nonpecuniary job characteristics. That is, compensating differentials depend on the tastes of the marginal rather than the average worker (Smith 1979). Following this line of argument, Killingsworth (1985) and Filer (1985) have suggested that compensating differentials explain the pay differentials between male and female jobs. Filer (1985) shows that men are more likely to be in jobs involving physical danger.

In short, economists contend that average differences in pay between male and female jobs are all "compensated" for by other advantages of female jobs such as lesser skill demands, more pleasant job requirements or working conditions, higher starting wages, or a lower risk of depreciation. The claim of advocates of "comparable worth" that discrimination creates uncompensated pay differentials between predominantly male and female jobs has two rationales that constitute anomalies for neoclassical theory. First, the hiring discrimination that keeps women out of male jobs leads to excess supply of labor in female jobs, and this crowding lowers their pay (Bergmann 1974, 1986). Alternatively, employers may discriminate against female occupations by paying less than their contribution to the organization (England and Norris 1985a, 1985b). Neoclassical theory predicts that market forces will eventually eliminate both types of discrimination. In the case of hiring discrimination, if some employers won't hire women in male jobs, women who want these jobs will offer to work at a lower wage, thereby providing an incentive for other employers to hire them. In time, higher labor costs should drive hiring discriminators out of business. Wage discrimination against female occupations should erode because employers have an incentive to stop paying men more than is necessary to induce them to work in male occupations and to

encourage women who will accept lower wages to enter the male occupations. Employers who fail to adopt this strategy will face higher labor costs.

Sociological Views

There is no single orthodox sociological view, but we suggest one that accounts for occupational sex segregation and lower pay for female occupations. This view sees the labor market as containing structural niches characterized by uncompensated advantages and disadvantages. It also posits that reciprocal feedback effects between labor markets and household behavior perpetuate the concentration of women in disadvantaged jobs. This view differs from the neoclassical view by insisting that institutional inertia and feedback effects between supply and demand sides of labor markets allow discrimination and its effects to persist indefinitely, despite market forces.

Explaining Segregation. Sociological explanations of segregation emphasize the reciprocal effects of gender-role socialization, discrimination by employers, and institutional arrangements. If the exhortation, reinforcement, and role modeling that make up socialization teach that certain jobs are appropriate for each sex, this will not only affect supply-side training and job "choices," but will also produce anew in each generation employers who hold discriminatory values and beliefs. Thus, socialization affects discrimination. But discrimination also affects socialization by showing individuals the costs of sex-atypical choices; discrimination creates accommodation to limited options that may appear as preferences. Such preferences are always held more ambivalently by disadvantaged groups. While many females do make traditional job choices, more females than males aspire to jobs nontraditional for their sex (Marini and Brinton 1984, p. 200). This sociological view of feedback effects between households and employment contrasts with the tendency of economists to see preferences and the household division of labor as causally prior to outcomes in labor markets (England and Farkas 1986).

Another example of feedback effects between demand and supply-side behavior is the sociological insight that jobs mold incumbents to have characteristics consistent with their jobs (Kanter 1977; Kohn and Schooler

1983). If women are discriminatorily assigned to jobs encouraging traditionally feminine skills and preferences, this amplifies those gender differences that existed prior to such discrimination. It perpetuates segregation without need of further discrimination and also creates a rationale for statistical discrimination, i.e., the tendency of employers to exclude all women from a job if the average woman is less suited than the average man for the job (Bielby and Baron 1986).

Sociologists have also emphasized institutional factors perpetuating segregation even in the absence of overt discrimination in job placement. Paramount among these factors are the structured-mobility ladders of internal labor markets (Althauser and Kalleberg 1981). Female jobs are typically on short mobility ladders leading only to other female jobs. Other such institutional practices include upper age limits for entering apprenticeships, veterans' preferences, limited public advertising of jobs, machinery designed for typical male height and strength, and departmental rather than plantwide seniority being credited toward promotions (Roos and Reskin 1984). The inertia in this view contrasts with the image of smooth, marginal adjustments advanced by neoclassical theory.

Explaining Occupational Pay. How does the sociological view explain the lower pay in predominantly female occupations? Earlier literature assumed that socialization and discrimination confined women to relatively menial positions (e.g., Chafetz 1974, p. 126; Weitzman 1979) and that their low pay is explained by their low skill level. However, recent evidence suggests that predominantly female jobs pay lower wages even when underlying dimensions of skill demands and working conditions have been controlled (England and McLaughlin 1979; England, Chassie, and McCormack 1982; Treiman, Hartmann, and Roos 1984; for an exception, see Rosenfeld 1983). This is a major complaint of advocates of "comparable worth" or "pay equity" (Treiman and Hartmann 1981; England and Norris 1985a, 1985b; Steinberg and Haignere 1987). This view is compatible with the sociological hypothesis that the sex composition of jobs affects their pay as a consequence of norms that devalue whatever work women do. This effect is reinforced by the exercise of male group power.

But pay discrimination against female jobs

could not persist if most women responded by moving into male jobs. While some have moved into male jobs (Beller 1984; Jacobs 1987), hiring discrimination, socialization, institutional practices, limited job information, and feedback effects among these inhibit such mobility. The realization that their wages are inappropriately low may be impeded by women's inability to compare their effort/reward ratio to that of men, precisely because without holding men's jobs they cannot assess the effort required there (Bielby and Bielby 1988; Crosby 1982). Women who move into male jobs often return to female jobs, a pattern that Jacobs (1987) attributes at least partially to harassment by male coworkers. Such mobility-limiting forces reduce the ability of market forces to erode discriminatorily low wages in female jobs.

Women's-socialized preferences for female jobs do not imply that the lower wages of such jobs are fully compensated by their more desirable nonpecuniary characteristics. Thus, we disagree with Killingsworth's (1985) contention that if women choose their jobs, wage discrimination is absent. The economic theory of compensating differentials suggests the need for a higher wage in a job some workers find undesirable only if there are insufficient other workers either indifferent or positively disposed toward the job's characteristics. But because men are socialized much more strongly than women to avoid typically female behavior (Maccoby and Jacklin 1974, p. 328; Chodorow 1978), male jobs can likely be filled without positive compensating differentials (England and Norris 1985b).

DATA, MODEL, VARIABLES, AND HYPOTHESES

Data

We analyze data from the young women's and young men's cohorts of the National Longitudinal Survey (NLS). The female data are from a national probability sample of women aged 14-24 in 1968. The panel of women were surveyed in 1968, 1969, 1970, 1971, 1972, 1973, 1975, 1977, 1978, and 1980. The men are a national probability sample of those aged 14-24 in 1966, surveyed in 1966, 1967, 1968, 1969, 1970, 1971, 1973, 1975, 1976, 1978, 1980, and

1981.² Each panel contains approximately 5,000 individuals. (The data are described in Center for Human Resource Research 1983.) Blacks were oversampled. We undertake separate analyses for blacks and whites within each sex, omitting other racial groups.

We have arranged the longitudinal data into a pooled cross-section time-series in which the unit of analysis is an individual in a particular year. Our tables report means and regression results from analyses that deleted observations in which the individual was not employed or was employed part-time (less than 35 hours/week). As a check on the robustness of our findings, we repeated the analysis for part-time workers. These are discussed below, but the coefficient estimates are not shown.

Model

A key feature of our analysis is the use of a model with fixed effects (Mundlak 1978; Hausman and Taylor 1981; Jasso 1985; Judge, Hill, Griffiths, Lutkepohl, and Lee 1982). The model controls for otherwise unmeasured year-specific (period) and person-specific effects. The model is:

$$Y_{it} = b_0 + \sum b_k X_{kit} + e_{it} \quad (1)$$

where

$$e_{it} = u_i + v_t + w_{it}. \quad (2)$$

In this equation, regression coefficients are denoted as b , k indexes the measured independent variables (X s), i indexes individuals, t indexes time periods, and e = error terms; u = cross-sectional (individual) component of error; v = time-wise component of error; w = purely random error component; and b_0 = intercept. Y , the dependent variable, is the natural logarithm of hourly earnings. The resulting coefficients are those that would be obtained if dummy variables for each year and each person (with appropriate omitted categories) had been included in the regression equations. It is convenient to

obtain these coefficients by fitting the following OLS model:

$$Y^*_{it} = b_0 + \sum b_k X^*_{kit} \quad (3)$$

where

$$Y^*_{it} = Y_{it} - \bar{Y}_i - \bar{Y}_t + \bar{Y} \quad (4)$$

$$X^*_{it} = X_{it} - \bar{X}_i - \bar{X}_t + \bar{X} \quad (5)$$

and other symbols are as defined above. That is, an OLS regression is fit after subtracting from each variable its person mean (across years) and year mean (across persons) and adding the grand mean (from the pooled cross-section time-series).

The t -statistics derived from the OLS model in equation (3) will be inflated because degrees of freedom were not reduced to take account of the implicit variables for persons and periods. To correct for this, standard errors are multiplied by $(\text{sqrt}(NT-K)/\text{sqrt}(NT-N-T-K+1))$ (where N is the number of individuals, T the number of time periods, and K the number of independent variables in the model). We report tests of significance that reflect this correction.

Our main purpose in using the fixed-effects model is to derive estimates free from selection bias. The fixed-effect estimators are not contaminated with spurious effects of any stable, unmeasured individual characteristics. Such characteristics include cohort, socioeconomic background and its effects. They also include unchanging aspects of intelligence, preferences resulting from early socialization, life cycle plans, and unmeasured human capital. The effects of these variables are removed by subtracting the person-mean from each observation. The unique effect of the stable but unmeasured characteristics of each individual is the "fixed effect" from which the method takes its name. Removing fixed effects is particularly important for our test of whether there is a net negative effect of occupational percent female on pay because it assures us that all stable pay-relevant but unmeasured individual differences between individuals in predominantly female and male occupations have been controlled.

The method also permits more accurate estimates of effects of experience than is possible in the cross-sectional analyses comprising much of the literature. The effects of experience on earnings are not computed by

² The advantage of using data on a recent cohort is accompanied by a disadvantage: sex discrimination against female occupations in raises or promotions that do not occur until middle age are not captured here. The oldest cohort of female workers was 37 the last year of the survey.

comparing individuals with more and less experience, as in cross-sectional studies. Rather, the longitudinal features of the data are used to assess returns to experience as individuals accumulate it. In the language of "movers" and "stayers," this method relies entirely on movers, so that the measured effect of experience is the effect of changes in experience on changes in earnings within persons. Likewise, the measured effect of occupational sex composition is based entirely on changes in earnings that occur when individuals change to a job with a different sex composition. Because period effects on earnings are removed by the model, it is not necessary to change earnings to constant dollars.

As a defense against another kind of selection bias, selection into the sample, we use a version of Heckman's (1979) correction for sample selectivity proposed by Berk (1983). (For examples of this method in use, see Nakamura and Nakamura 1985, and Corcoran, Duncan, and Ponza 1983.) Women who receive low wage offers may reduce their hours or leave employment entirely. Such selection is less common among men. As a result of such selection into employment, samples of employed women may be truncated on earnings in a way that biases coefficient estimates of demand-side effects such as the returns to experience or education or wage offers made to particular occupations. To remove this bias, we have performed logistic-regression analyses for each year (for white and black women separately) to predict our sample-selection requirement of full-time employment (as opposed to nonemployment or part-time employment). The variables used to predict full-time employment are education, experience, marital status, number of children of age six or under in the household, and husband's annual earnings (coded 0 for unmarried women). We used these equations to compute an instrumental variable that is the predicted probability of full-time employment for each woman in each year.³ This instrument, with deviations from time-, person-, and grand means as in Equation (5) above, was added as a predictor to each of the earnings equations for females.

³ The formula for the predicted probability from a logistic regression is $1 / (1 + e^{-bx})$ (where the first b is the constant and subsequent b s are the coefficients attached to independent variables).

Controlling for this variable helps remove any sample-selectivity bias that may be present (Berk 1983). We present only results with this correction, but note that it exerted only trivial effects on the magnitudes of coefficients, and no effect on conclusions.

Variables

All regressions take the natural logarithm of current hourly earnings as the dependent variable. The independent variables include years of education, marital status (presently married or not), hours usually worked per week on current job, the percent female (in 1970) in one's detailed Census occupation,⁴ weeks of employment experience, and, for women, the instrumental variable that is the predicted probability of full-time employment based on personal and family characteristics. Although we refer to effects of being in "female" occupations as a shorthand throughout, we actually assess such effects along a continuum of sex composition rather than choose an arbitrary cutting point to define female and male occupations. Experience is the total number of weeks of employment (whether full- or part-time) beginning one year prior to the first survey wave.⁵ Interaction and quadratic terms constructed from

⁴ NLS data code respondents' occupation in 1960 Census categories. We merged the percent female in 1970 occupational categories onto the file from documentation provided with the codebook for the NLS Mature Women survey. We chose 1970 data on sex composition because it was closer to most of the years of data than 1960.

⁵ The NLS data do not provide measures of years of experience prior to one year before the survey. However, given our fixed-effects specification, unmeasured differences between individuals in experience prior to the survey are automatically controlled. In each year of the survey, respondents were asked the number of weeks they had been employed in the prior year. We added these entries to compute work experience accumulated by any given year, beginning with the year prior to the survey. This procedure presented a problem for the surveys following those few years in which no survey was conducted (1974 and 1979 for women and 1972, 1974, 1977, and 1979 for men). Our procedure was to assume that, if respondents were employed at the prior survey date, they were also fully employed during the missing year, while if they were not employed at the prior survey date, they were also not employed during the missing year.

these variables are entered where appropriate to test hypotheses. Variables constructed from the NLS data are listed in Table 1.

Two of the hypotheses from human-capital theory (see below) call for measures of home time, net of experience. "Home time" refers to time spent out of the labor force in homemaking. In cross-sectional data, when individuals differ in age, home time and experience can be separately measured. However, since our measure of experience is only available from the beginning of the NLS survey, home time is a linear and negative function of experience; it provides no distinct information. Thus, we include experience in our models and take it to be indicative of either experience or lack of home time. Due to this data limitation, we cannot estimate the effects of home time or experience while holding the other constant.

Finally, a set of occupational characteristics from the Dictionary of Occupational Titles is added to the model to test hypotheses requiring controls for the skill demands and working conditions of occupations (U.S. Department of Labor 1965, 1977; Daymont and D'Amico 1979).⁶ These variables, listed in Table 2, were merged onto each case according to the 1960 occupational codes on the NLS file.

Hypotheses

We test two kinds of hypotheses—those that explain segregation and those that explain wage differences between female and male occupations. Our analysis directly tests explanations of segregation offered by human-capital theory. Rejecting these would lend support to the sociological view of the causes of segregation, although it is not directly tested. Our analysis does directly test the

Table 1. NLS Variables Used in Wage Regressions

Name	Description
LNWAGE	Natural logarithm of hourly wage on current job
ED	Years of education completed
MAR	Marital Status: 1 = currently married; 0 = other
HRS	Hours per week usually worked at current job
PF	Percent female in 1960 detailed Census occupation
EXP	Weeks of employment experience since 1 year before beginning of survey

Source: Documentation for National Longitudinal Surveys, young men's and women's cohort (Center for Human Resource Research, 1983).

sociological view that female occupations suffer discriminatorily low wages against the economic view that occupational wage differentials are explained by compensating differentials. Although we address two distinct sets of questions, those regarding segregation and those regarding wage differentials, the issue of whether female occupations have advantages that compensate for their disadvantages is central to both.

HYPOTHESIS 1. *Appreciation and Depreciation.* Human-capital theory predicts that female occupations offer higher starting wages but lower rates of human-capital appreciation than male jobs. If female occupations have flatter wage increases with experience, the interaction term of experience times occupational percent female should have a significantly negative effect on earnings. Human-capital theory also predicts that female occupations offer lower depreciation during home time. Because in these data, experience and home time are linearly and negatively related, the notion that jobs become predominantly female because they offer low depreciation also leads us to predict a negative interaction effect of percent female and experience.⁷

HYPOTHESIS 2. *Indirect Tests of Appreciation and Depreciation.* Polachek (1985) has criticized England's (1982, 1984) use of

⁶ We are grateful to Mark Hayward of Battelle for providing machine-readable DOT data for 1960 codes. The data were assembled by Thomas Daymont and Ronald D'Amico of Ohio State University, Center for Human Resource Research. All variables are from the most recent Fourth Edition of the Dictionary of Occupational Titles (U.S. Department of Labor 1977), except for five variables from the Third Edition (U.S. Department of Labor 1965). These are (1) direction, control, and planning; (2) one of the two measures of stress; (3) strength (heavy work); (4) other physical requirements; and (5) bad working conditions.

⁷ Careful readers may be confused by England's (1985, p. 442) claim that Polachek's thesis implies a negative sign on the interaction effect of percent female times home time. This claim is a misprint; it should read that the thesis implies a positive sign on the interaction of percent female and home time. This implies a positive interaction of percent female and experience in these data.

Table 2. Control Variables From Dictionary of Occupational Titles

<i>Skill Demands</i>	<i>Skill Demands (continued)</i>
Direction, control, and planning	Influencing
Strength (heavy work)	Use of sensory or judgmental criteria
Other physical requirements	Use of measurable or verifiable criteria
Complexity with data	Dealing with people
Complexity with people	Need to set limits, tolerances, or standards
Complexity with things	Need to climb or balance
General educational requirement for reasoning	Need to stoop, kneel, crouch, or crawl
General educational requirement for mathematics	Need to reach, handle, finger, or feel
General educational requirement for use of language	Need to talk and hear
Years of vocational or on-the-job training required	Need to see well
Requirement for intelligence	
Requirement for verbal aptitude	<i>Working Conditions</i>
Requirement for numerical aptitude	Stress (2 measures)
Requirement for spatial aptitude	Repetitive, continuous work
Requirement for form perception	Task variety and change
Requirement for clerical perception	Exposed to cold temperatures
Requirement for motor coordination	Exposed to hot temperatures
Requirement for finger dexterity	Exposed to wet working conditions
Requirement for manual dexterity	Exposed to noise
Requirement for eye-hand-foot coordination	Exposed to hazards
Use of feelings, ideas, or facts	Exposed to fumes

Source: Daymont and D'Amico 1979.

interaction terms involving percent female to test human-capital predictions, arguing that measurement error in the variable biases coefficients toward zero. Because even the Census detailed occupational categories are broader than the job titles used by firms, and much segregation exists within the Census categories (Bielby and Baron 1984), the sex composition of one's Census occupation measures the sex composition of one's job imperfectly. Accordingly, Polachek (1985) suggests testing predictions about occupational choice from human-capital theory in a way that does not rely on measures of occupational categories. A positive effect of the square of home time would indicate that those experiencing more home time have chosen jobs in which the negative effect of home time is relatively small. This follows from the fact that a positive sign on a squared term can be interpreted to mean that those who score higher on the variable are subject to a higher positive or lower negative effect of that variable on the dependent variable. In our data, home time is a negative linear function of experience. Mathematically, a positive net effect of the square of home time implies a positive net effect of the square of experience. (The intuitive explanation of this is that to change to a prediction involving experience, the sign needs to be reversed once for each of the two home time terms in the squared term, and thus the sign remains the same.) If the

square of experience has a positive effect, this is indirect evidence that the segregation we observe within detailed job categories results from rational choices of women trying to minimize the penalties of time at home. A positive effect of this same quadratic term is also indirect evidence that those planning more experience select jobs with the greatest returns to experience, another prediction of human-capital theory.

HYPOTHESIS 3. Starting Wages. Even if female occupations have the low appreciation specified by Hypotheses 1 and 2, this does not make them advantageous for women planning home time. Rather, it is the higher starting wages presumed to accompany flat appreciation that would make such jobs advantageous to those with intermittent employment. If this is the explanation of segregation, then female jobs should show higher starting wages, other things equal. To test this, we use the regression results to see how predicted wages differ by sex composition when experience is 0. When experience is 0, a positive sign on the coefficient of percent female in an equation also including the interaction term for percent female times experience would indicate higher starting wages in predominantly female occupations.

HYPOTHESIS 4. The Effect of Occupational Sex Composition on Pay. Turning to explanations of the relatively low pay in female occupations, we use the DOT mea-

tures of occupational skill demands and working conditions as controls. We test whether less onerous demands and conditions fully compensate for the relatively low pay of female occupations, or whether there is a net effect of occupational sex composition on wages. The sociological hypothesis is that, after controlling for human-capital and occupational characteristics, the percent female of one's occupation has a negative effect on wages. Such an effect would be evidence of crowding in, or wage discrimination against, female occupations, leading to uncompensated wage differentials. The absence of such an effect would be evidence in favor of the economists' view of compensating differentials.

FINDINGS

Table 3 presents the means for full-time workers on all NLS variables, (prior to the subtractions in equations (4) and (5), required for the fixed-effects model). We note that both black and white women were in occupations that averaged over 65 percent female, whereas men of both races were in occupations that averaged less than 23 percent female.

Equations for black and white women in Table 4 show coefficients when the instrumental variable that is the predicted probability of employment is added to the model as a control. All coefficients reflect the fixed-effect modeling described in equations (1)–(5). In Table 4, specification 1 is a basic human-capital model with occupational sex

composition added. For all groups, those in occupations with a higher percent female earn less. Hypotheses 1–4 are tested in specifications 2–4 by adding one or more variables to this basic model.

Hypothesis 1, derived from human-capital theory, states that occupations with a higher percent female will offer lower returns to experience and penalize home time less, either of which would lead to a negative interaction effect of experience times occupational percent female. Specification 2 in Table 4 tests this hypothesis; the results are equivocal. White women show the expected negative effect; those in occupations with more females receive lower returns to experience or less depreciation during home time. Given our inability to distinguish unique effects of home time and experience with these data (because the variables are linearly related), we cannot be sure which is operative or whether both are present. This is unfortunate, because while both are predicted by economic theory, only lower depreciation would constitute an advantage for female occupations. Low appreciation is in itself a disadvantage; indeed, it could be seen as evidence of wage discrimination against female occupation that grows with seniority. Low appreciation in female occupations is consistent with the neoclassical view only if the low appreciation is accompanied by the advantage of relatively high starting wages, an effect that we test for directly (and fail to find) in Hypothesis 3, discussed below. Thus, if the interaction of percent female and experience for white women merely indicates lower appreciation in female occupations (rather than lower depreciation or higher starting wages), it is more consistent with a sociological notion of wage discrimination against female occupations than with economic theory. It is only if it is indicative of lower depreciation in female occupations that this finding for white women supports the explanation of segregation from human-capital theory.

The interaction of percent female and experience is in the predicted direction but not significant for black women. Contrary to prediction, the interaction effect has a significant positive effect for both black and white men. In results not shown, the hypothesis also fails to receive support for three of the four groups of part-time workers (though here it is black men who show the predicted negative

Table 3. Means For Race/Sex Groups

Variable	White Women	Black Women	White Men	Black Men
WAGE (\$/hour)	3.26	3.01	5.50	3.83
LNWAGE (LN\$/hour)	5.66	5.58	6.12	5.76
ED (years)	12.83	12.00	12.85	11.11
MAR (1 = married)	.55	.42	.66	.49
HRS	40.92	40.50	45.06	43.13
PF	68.28	65.51	19.81	22.56
EXP (weeks)	210.62	202.26	343.78	288.86

Note: These means apply only to full-time workers (defined as working at least 35 hours/week). Male and female means cannot be rigorously compared since men were surveyed in 1966, 1967, 1968, 1969, 1970, 1971, 1973, 1975, 1976, 1978, 1980 and 1981, while women were surveyed in 1968, 1969, 1970, 1971, 1972, 1973, 1975, 1977, 1978, and 1980.

Table 4. Regression Coefficients^a from Fixed-Effect Models for Women and Men Employed Full-Time

	Women ^b							
	Whites				Blacks			
	1	2	3	4 ^c	1	2	3	4 ^c
Education (years)	.1175* (22.8)	.1173* (22.8)	.1162* (22.3)	.1190* (21.5)	.1273* (16.8)	.1278* (16.9)	.1277* (16.8)	.1288* (15.8)
Experience (weeks)	.0006* (8.5)	.0008* (8.5)	.0007* (5.9)	.0006* (8.7)	.0005* (4.7)	.0006* (4.2)	.0008* (4.4)	.0005* (5.0)
Experience ²			-.9E-7 (-0.8)				-.3E-6 (-1.7)	
Hours worked	.0126* (19.4)	.0127* (19.4)	.0130* (19.9)	.0136* (20.7)	.0153* (13.9)	.0153* (13.9)	.0156* (14.1)	.0156* (14.0)
Marital status	-.0448* (-3.7)	-.0434* (-3.6)	-.0517* (-4.3)	-.0469* (-3.9)	-.0407* (-2.2)	-.0405* (-2.2)	-.0420* (-2.2)	-.0472* (-2.6)
EXP X PF ^d		-.3E-5* (-3.2)				-.2E-5 (-1.2)		
% Female in occupation	-.0013* (-6.7)	-.0006* (-2.3)		-.0008* (-2.6)	-.0016* (-5.5)	-.0013* (-2.9)		-.0011* (-2.3)
Adjusted R ²	.128*	.129*	.123*	.146*	.153*	.153*	.149*	.179*
N	10089	10089	10070	10089	4248	4248	4218	4248
	Men							
	Whites				Blacks			
	1	2	3	4 ^c	1	2	3	4 ^c
Education (years)	.1570* (35.7)	.1530* (34.5)	.1547* (35.2)	.1547* (34.0)	.1531* (20.3)	.1497* (19.7)	.1512* (20.1)	.1543* (19.7)
Experience (weeks)	.0008* (7.4)	.0014* (9.8)	.0010* (7.4)	.0007* (6.9)	-.0001 (-0.7)	.0006* (2.7)	.0003 (1.2)	-.0001 (-0.7)
Experience ²			-.3E-6* (-2.5)				-.5E-6* (-2.3)	
Hours worked	.0133* (24.8)	.0132* (24.7)	.0135* (25.5)	.0141* (26.4)	.0154* (15.9)	.0154* (16.0)	.0154* (16.1)	.0163* (16.8)
Marital status	.0649* (4.7)	.0645* (4.7)	.0597* (4.4)	.0551* (4.1)	.0739* (3.2)	.0725* (3.2)	.0700* (3.1)	.0586* (3.0)
EXP X PF ^d		.8E-5* (6.4)				.9E-5* (4.6)		
% Female in occupation	-.0007* (-2.5)	-.0025* (-6.4)		-.0010* (-2.5)	-.0003 (-0.6)	-.0022* (-3.7)		-.0002 (-0.2)
Adjusted R ²	.180*	.182*	.182*	.204*	.198*	.202*	.200*	.222*
N	13874	13874	14102	13874	4569	4569	4601	4569

Note: Dependent variable is Ln hourly wage. All models include fixed effects. See equations 1-5 in text.

^a The *t*-statistic is in parentheses under coefficient.

^b Female regressions include the instrumental variable from the equation predicting full-time employment. See text.

^c Specification 4 includes all DOT variables listed in Table 2.

^d Interaction term of Experience times % Female in Occupation.

* $p < .05$, 2-tailed test.

interaction of percent female and experience). In short, because the findings are inconsistent with Hypothesis 1 for three of the four full-time race-sex groups, as well as for three of the four part-time race-sex groups, we consider it not supported.

Hypothesis 2 is an indirect test of the explanation of segregation offered by human-capital theory. The prediction is that the square of experience will have a positive sign, indicating that those who plan the most home

time choose jobs with less negative depreciation rates and/or that those with the most experience choose jobs with high returns to experience. Specification 3 in Table 4 shows that, contrary to the prediction of a positive effect, the squared term for experience is negative and significant for men of both races and negative and nonsignificant for women of both races. For part-time workers, the prediction is upheld for only one of the four race-sex groups, white men (findings not

shown). In sum, Hypothesis 2 is not upheld for any of the four race-sex groups among full-time workers and for only one of the four groups of part-time workers.

Hypothesis 3 concerns starting wages. If segregation arises because more women than men choose jobs with high starting wages and flat appreciation, starting wages predicted from specification 2 in Table 4 should be higher in occupations with a higher percent female. When experience is 0, the effect of the interaction term (experience times percent female) is 0, so the effect of occupational sex composition on starting wages is given by the coefficient for the additive effect of percent female. Table 4 shows that this has a significant negative effect for each of the four race-sex groups of full-time workers. Among part-time workers, analyses not shown here find the effect to have a negative sign for all four race-groups and to be significant for black and white women. Thus, female occupations do not offer the higher starting wages that human-capital theorists posit to be their advantage. On the contrary, net of human capital, starting wages are lower in female occupations. This means that if those few coefficients consistent with the economic explanation of segregation (discussed above) indicate low appreciation in female occupations (rather than low depreciation), then they are, nonetheless, not evidence in favor of the economic view, because the low appreciation is not accompanied by higher starting wages. Overall, the results provide very little support for economic explanations of occupational segregation.

Hypothesis 4 states the sociological view that female occupations pay less than male occupations, net of human capital, skill demands, and working conditions. It can be juxtaposed to the economic view of compensating differentials, which predicts no net effect of sex composition on wages. This hypothesis is tested by specification 4 in Table 4, which controls for human capital and the skill demands and working conditions of one's occupation. It shows that the effect of percent female is negative and significant for all groups except black men, for whom the effect is not significant. Because wages are in logarithmic form, the coefficients times 100 indicate the percentage decrease in earnings for each 1 percent female in one's occupation. Thus, white women's wages decrease .08 percent for each one point in occupational

percent female. The figure for black women is .11 percent and for white men is .10 percent.⁸ In results not shown on part-time workers, all four race-sex groups show a negative effect of percent female that is statistically significant for the two female groups. Overall, these findings support the contention that uncompensated pay differentials between male and female occupations are caused by wage discrimination against female occupations, as sociologists have suggested. Insofar as the DOT control variables provide adequate measures of non-pecuniary disamenities, our findings fail to support the economic view that compensating differentials for unpleasant working conditions explain all pay differences between male and female occupations.

DISCUSSION

These regression results provide little support for the explanation of segregation offered by human-capital theory. Research attention might better shift toward sociological explanations of segregation in terms of multiple feedbacks between gender-role socialization, discrimination, and institutional practices; we only indirectly tested this sociological model of segregation. Yet, we *have* provided a direct test of the sociological claim of uncompensated and discriminatory pay differences between male and female occupations. Net of human capital, skill demands, and working conditions, those who work in occupations with more females earn less. This is evidence of the type of discrimination at issue in comparable worth or pay equity. Our conclusions on these points are more credible than those from past cross-sectional studies because our fixed-effects model controls for any unmeasured differences in human capital or preferences between those in male and female occupations. Our confidence in the findings is further strengthened by the presence of detailed controls for occupational characteristics and the use of a correction for sample selectivity. Finally, it is important to remember that this evidence of wage discrimination

⁸ However, we cannot simply multiply these figures times 100 to predict the percentage change in wages that would occur if one moved from an all male occupation to an all female occupation. The change would be larger than this, because the logarithmic functional form is nonlinear.

comes from data on young cohorts of men and women.

Our findings do not imply that neoclassical theory entirely lacks explanatory power. To be sure, human capital affects earnings, and sex differences in experience are the proximate cause of between a quarter and a half of the sex gap in pay (Mincer and Polachek 1974; Sandell and Shapiro 1978; Corcoran 1979; Corcoran and Duncan 1979). But human-capital theory has not successfully explained occupational sex segregation, and the neoclassical notion of compensating differentials has not explained the interoccupational wage gap between predominantly male and female occupations.

Two qualifications to our interpretations of the effects of occupational sex composition on wages should be noted. First, to the extent that our measures of occupational skill demands and working conditions fail to fully tap dimensions the marginal worker perceives as disamenities, compensating differentials may explain a portion of the pay differences between male and female jobs. Yet, our confidence in the present findings stems from the broad range of such variables we have controlled. Second, it is possible that the net effect of percent female results in part from crowding in female occupations, as Bergmann (1974, 1986) has suggested, rather than solely from pay discrimination against occupations based on their gender composition. Although we agree that crowding may explain part of this effect, we doubt that it is the sole explanation, because it is likely that sexism affects wages, not only via discriminatory hiring, but also via discrimination in occupational wage setting after jobs have achieved their sex composition.

The findings are consistent with the sociological view that sex discrimination in hiring and wages, its feedback effects onto socialization and tastes, and other institutional practices combine to limit the interoccupational mobility that provides the neoclassical mechanism for eroding segregation and uncompensated pay differences between male and female occupations. But is the neoclassical mainstream impervious to such views?

Recent developments within mainstream economics may be hospitable to an integration with sociological views. One of these is implicit-contract theory (Okun 1981, pp. 26-133; Azariadis and Stiglitz 1983; Farkas and England 1985; Rosen 1985; England and

Farkas 1986). After on-the-job training that is specific to a job ladder in one particular firm, both employers and workers have incentives to avoid turnover. This is because workers are less productive (and can earn less) in jobs for which they are untrained, while employers wish to avoid incurring training costs for new employees. Accordingly, employers develop strategies to reduce turnover. One such strategy is to pay a wage lower than the workers' productivity in the early years of employment, while offering seniority raises that take workers' wages above their estimated productivity in the later years.

Although this implication of implicit-contract theory is often ignored, these strategies both discourage the replacement of men with women and make it more costly for women to move. Further, such compensation strategies mean that most of the competitive forces that might sort workers by their human capital and/or erode uncompensated interjob wage differentials are reduced to operating at the single time-point of entry to the firm. It is at this point that employers offering greater lifetime earnings will be motivated to choose the cheapest available workers with the greatest productive potential without discrimination or other irrational criteria. Because this "precontract" point is affected by competitive forces, economists often write as if the usual conclusions about erosion of uncompensated wage differentials and other discrimination still hold in a model including implicit contracts. Indeed, one can derive from implicit-contract theory an explanation of segregation that has the same predictions as human-capital theory. In this view, women planning intermittent employment are well advised to avoid jobs with back-loaded compensation (the "implicit contract") in favor of those with higher starting wages.

Despite the fact that many of the new developments in labor economics can be given this conservative reading consistent with human-capital theory, they also contain implications consistent with a notion of demand-side segmentation of labor markets (Dickens and Lang 1985; Lang and Dickens 1988). When the competitive forces of labor markets impinge primarily on a few discrete moments in individuals' careers, as is implied by implicit-contract theory, their effects are much less swift and powerful than the orthodox economic view suggests (Farkas, England, and Barton 1988). Although many

economists still resist these implications, they provide an opening for integration with the sociological perspective. In this view, market forces are present, but they may amplify sex differentials through the feedback effects emphasized by sociologists as often as they erode discrimination and uncompensated wage differentials between structural locations. This view helps us understand the imperfect sorting of workers, limited mobility, and uncompensated wage differentials posited by structural sociologists and suggested by our results.

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STUDYING SITUATIONS AND IDENTITIES USING EXPERIENTIAL SAMPLING METHODOLOGY*

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This paper explores a central question in social psychology: How are particular meanings of particular identities selected in a situation? This question was examined in a field setting, using experiential sampling techniques in which participants carried an electronic timer for two days as they engaged in their normal activities on a college campus. When the timer signalled them, participants responded to a questionnaire concerning who they were with, what they were doing, what identities and roles they were involved in at the time, and what their perceptions were of the situation. From the work of Burke and Reitzes, which postulates that people behave in ways that conform to the meanings of their identities (the principle of semantic congruity), we hypothesized that the particular meaning of respondents' identities in situations would conform to the meaning of the situations in which the identity was held. Analyses of the data indicated strong support for this hypothesis. How people view themselves depends on how they view the situation they are in, and how they behave depends on how they view themselves.

INTRODUCTION

Due to the complex nature of some social phenomena, research methods often fail to adequately quantify data and test hypotheses and fail to capture the essential nature of the phenomena. One of these problematic areas involves the study of *identities* or, more specifically, the relationship between identities and the transitory situations in which they are enacted.

Typically, identities have been studied with retrospective techniques, in which individuals report the characteristics of various identities that were invoked in past situations. Respondents are removed from the situations and persons that normally invoke these identities. In such studies, researchers assume that identities can be adequately measured and

understood removed from the situations in which they occur. While this assumption may be correct, it runs counter to a main tenet of symbolic interactionism, that behavior can only be understood within a particular situational context. Obviously, any method that provides a more complete interface between identities and situations would better our understanding of these two concepts.

Researchers have also used observational studies of people in situations. This method's strength is in allowing the researcher access to individuals *in situ*; its weakness is that the researcher is not privy to the thoughts, feelings, and perspective of the respondents. While this approach and the retrospective one may be adequate in some cases, current electronic technology allows researchers the opportunity to unobtrusively study identities *in situ*, through the use of experiential sampling methodology (ESM). This study demonstrates how this novel research method can be used to investigate important hypotheses in identity theory (Stryker 1980).

Experiential Sampling Methodology

Experiential sampling methodology (see Franzoi 1981; Franzoi and Brewer 1984; Hormuth 1986; Prescott, Csikszentmihalyi, and Graef 1981) allows for the random sampling of individuals' thoughts, feelings, and experi-

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ences as they go about their daily activities. By using an electronic timing device that randomly emits audible signals, participants are interrupted periodically to describe what they were doing and thinking just prior to the interruption. Participants, in a sense, collect data on themselves within prescribed parameters determined by the researchers. While this technique is still retrospective, the time lag between experience and report is very short and participants are generally still in the situation where the reported identity has been invoked.

Even though participants' daily activities are interrupted periodically by the timers, overall they respond in a timely fashion and do not view these interruptions as very disruptive (Hormuth 1986; Pawlik and Buse 1982). In addition, Franzoi and Brewer (1984) found no evidence that repeated answering of timer questionnaires over a two-day period significantly altered participant awareness and perceptions. Therefore, ESM appears to be a relatively unobtrusive data-collection technique that elicits more than adequate participant cooperation. We believed that this method could be put to good use in the study of situations and identities.

Situations and Identities

Because identities strongly influence people's behavioral choices, a central concern of identity theory is the relation between a person's identity and the situation she or he is in (Stryker 1982; Stryker and Serpe 1983; Stryker and Statham 1984). People have multiple identities, not all of them active or invoked at any particular time or in any situation. Some identities are active, others latent. As a person moves into a new situation (or redefines an old one), an important question is how particular identities are selected from the repertoire of possible identities. Further, given the selection of identities, it is important to understand how they are shaped in the situation.

Identities refers to the different reflexive internalized positional designations that arise from the different social situations, contexts, and relationships that we encounter. Stryker (1980, p. 60) says that while "one may have a long list of identities . . . the number of identities is limited to the number of structured role relationships one is involved in." Thus, a person may have identities as a

student, wife, mother, and child. Here the identity concept has a clear association with earlier concepts of the self, such as James' (1890) "social me" and "multiple selves," Mead's (1934) "Me," and the more theoretically elaborated concept of role (Biddle and Thomas 1966; Sarbin and Allen 1968).

Moreover, identities carry shared meanings and behavioral expectations associated with roles, but identities are the internalized shared meanings of the role, not the role itself. For example, having a "student" identity is based on the behavioral expectations or meanings we have internalized from our association with the role of a student. Roles in this instance provide the shared meanings through which an individual and others are able to establish an identity. Because of their relationship to roles, identities often have been termed "role-identities" (cf. McCall and Simmons 1966). The work of Burke and others (Burke 1980; Burke and Reitzes 1981; Chassin et al. 1981; Mutran and Burke 1979; Burke and Tully 1977) suggests that identities are relatively stable, that they are experienced indirectly, and that they are a source of motivation to behave in ways that are "consistent with" the identity.

In addition, McCall and Simmons (1966), Rosenberg (1979), and Stryker (1980) expand the notion of identities and the self by noting that the many identities of a person are not randomly collected, but are organized within the self. One basic organization is a hierarchy of importance. While McCall and Simmons (1966) call this a "prominence hierarchy," Rosenberg refers to it as "psychological centrality," and Stryker entitles it a "salience hierarchy."¹ For Stryker and Statham (1984, p. 99), the "salience of an identity will affect its threshold of invocation, interacting with other defining characteristics and other self-characteristics."² It accounts for the consis-

¹ For McCall and Simmons (1966), the "salience hierarchy" refers to a more transient form of the prominence hierarchy of the self within a given situation. They refer to this as the "situational self." This component of the self, they suggest, determines the "relative order of priority as possible sources of performance in the situation." (p. 85).

² Stryker's position varies on this point. In some places he says that salience influences the likelihood that an identity will be invoked, as cited here. Elsewhere, he suggests that salience is

tency and variability of an identity being invoked across situations. In this paper we use the terms importance and salience interchangeably.³

Social psychologists have found the term *situation* useful, though its referent has changed over the years. Situation first referred primarily to the physical, objective environment, while recently it may refer more to the subjective cognitions of social actors (Forgas 1979, pp. 12–15). The usage of the term has not been consistent, and most writers have failed to provide any definition, relying instead on common connotations. An exception is in the framework of Affect Control Theory (ACT) by Smith-Lovin (1987), who is interested in the impact of setting or situation on the behaviors of individuals in those settings.

In her view, settings must be recognized and labeled as salient features of social interaction. As such, they must be associated with affective meaning like social identities and behaviors. The implication of this conceptualization of settings or situations is that their meanings can be measured in the same manner as self-meanings. Further, the relation between identities and situations, like the relation between identities and behaviors, exists through the common semantic dimensions and the human need for semantic consistency. We refer to this as the principle of semantic congruity.

Viewing the term *situation* from this perspective, it is a cognitive-affective construct influenced by two factors. First is the location or place defined by social conventions. People spend much time managing "place" to facilitate relationships; that is, providing the right atmosphere by managing

appropriate symbols (lighting, music, furnishings, color) for the proper playing out of roles and identities (audience, lover, shopper, student). Place not only signals the appropriate identity but also facilitates proper role construction or performance. Second is the set of social relationships and expectations within which people find themselves at a particular time and place. In either case, it is the *meaning* of the situation to the role-player/maker that is important. The role-player/maker conceptualizes or labels the situation (often through instruction or negotiation) and responds to the meanings of the situation so labeled or conceptualized.

Model and Hypotheses

We hypothesize, extrapolating from the work of Burke and Reitzes (1981) and the principle of semantic congruity, a correspondence between the meanings of the situations in which individuals are located and the meanings of the identities they have invoked. To test this hypothesis, we divide the analysis into two parts. First, we examine the effect on situation meaning of some factors that may influence the meaning of both situation and identity (possibly producing a spurious relationship between these two). These factors include (a) the reason the respondent is in the situation (wanted to be there, had to be there, others wanted them there, in transit to another setting); (b) how much control they feel they have; (c) how involved they feel they are in the situation; and (d) reasons they had the identity they did (chose it themselves, others chose it, situation demanded it, it was important to themselves, it was important to others). In the second part of the analysis, we observe the effects of situation meaning on identity meaning, controlling for the effects of the above-mentioned factors.

We further hypothesize that important or salient identities will be selected in situations more often than less important identities (Stryker 1980).

METHOD

Forty-one undergraduate women enrolled in an introductory psychology course at Indiana University participated in the study.⁴ These

defined as the likelihood that an identity will be invoked in a situation (Stryker 1980, p. 61). In this paper, we keep position in the salience (importance, prominence) hierarchy separate from its effects. Thus, the terms *importance*, *salience*, and *centrality* refer to the position of an identity in the hierarchy, while the probability that the identity will be invoked is seen as a testable consequence of that position.

³ While each of the terms (*centrality*, *prominence*, and *salience*) is used slightly differently by their authors, these differences are not important in the present research. They agree on the general nature of the hierarchy, and identities at the top of the hierarchy are hypothesized to be more likely to be invoked than those lower down.

⁴ While such a sample is somewhat ad hoc, it is

volunteers received extra course credit for their participation. When the participants first reported to the researcher, the nature of the study was explained and they were informed that they could withdraw at any point. None did. They were then given a questionnaire to fill out, which contained the following instructions:

"Using nouns, please identify who you currently are in [the college town where they were attending]. In completing this page, think of the different things you do from day to day, who you interact with, and how you would identify yourself during those situations. First, list ten very important identities, and then, ten relatively unimportant identities. For example, some of the descriptions provided might be of the following nature: friend, daughter, student, female, athlete, Baptist, mother, wife, USA citizen, Democrat, bird-lover, jogger, cook, photographer, musician, choir member, mystery novel reader, computer jock, animal lover, artist, typist. As in these examples, please use nouns. *Do not use adjectives* such as happy, pretty, hungry, and old."

Participants were asked to list very important and relatively unimportant identities in the college town in which they were living to focus their attention on identities relevant to the situation being studied. Following this request, they were asked to review the 20 identities they listed and rate them along the following dimensions, using seven-point scales: how beneficial or rewarding (from "very rewarding" to "not at all rewarding"); how satisfying or fulfilling (from "a great deal" to "very little"), and how time-consuming (from "very little" to "a great deal"). In addition, participants rated each identity on a nine-item, seven-point semantic-differential scale with three items each measuring their perceptions of the evaluation (good-bad, negative-positive, and sociable-unsociable); potency (soft-hard, serious-humorous, and free-constrained); and activity (active-passive, calm-excitable, quiet-lively) of the identity (cf. Osgood, Succi, and Tannenbaum 1957).

When participants completed the questionnaire, they were provided an electronic timer

equipped with an audible buzzer that was preset to go off at a random interval with a predetermined mean value (90 minutes) over a two-day period. Whenever the timer signaled, participants were instructed to complete a short, two-page questionnaire. Earplugs were also supplied to make the timer signals inaudible to others, if the participant so desired. Participants turned on the timers when they awakened in the morning and turned them off at night when they went to sleep. During the two-day period, the average number of timer questionnaires completed was just short of 20, indicating that the participants had the timers on for about 15 hours per day. It appears that participants were following the researcher's instructions about when the timers should be turned on and off for data collection.

The timer questionnaire contained a series of questions designed to ascertain time of day, where the participants were, and what they were doing during the past 10 minutes. Additionally, participants were asked to indicate how many people (both male and female) were in their immediate presence, how many of each they interacted with, and why they were in the situation (participants could check any number of the following reasons: they wanted to be, had to be, someone else wanted them to be, they were in transit, they had nowhere else to go). They were then asked to rate, using the same nine-item EPA semantic-differential scale used in the pretimer questionnaire, "the situation you are in," and to indicate on seven-point scales the amount of their control over the surroundings (complete control to no control in seven points) and the degree of their involvement in what was going on around them (not at all involved to very much involved in seven points). Each participant also wrote the names of up to four identities they had in the last 10 minutes. For each identity they then indicated the reasons for that identity during that period of time: because they chose it (yes, no); because others chose it (yes, no); and because the situation demanded it (yes, no). Then, using a seven-point Likert scale, they indicated how important that identity was to them "very important to me" to "not important to me") and how important that identity was to others that they had that identity "very important to others" to "not important to others"). Finally, they were asked to rate the evaluation,

important to recognize that when testing for basic social-psychological processes, such as those hypothesized in the present study, failure to find support in any population casts doubt on the validity of the hypothesis.

potency, and activity meaning of each of their identities in that situation on a semantic-differential scale, using the same items to rate the meaning of the situation and the pretimer questionnaire identities.

RESULTS

Examining Identities Invoked

Before describing the results of the analysis for our hypothesis, we present an overview of the identities sampled. A total of 1,312 identities were listed in 801 situations in which the timers went off and participants answered the timer questionnaires. That is, each person listed an average of 1.64 identities per situation. These identities were extremely varied, including 4-H member, friend, band member, plant lover, seamstress, sex-object, television-viewer, waitress, student, night owl, and a host of others. The 1,312 identities were categorized into 173 different categories. Not unexpectedly, given the context of the study, the largest categories were "friend" and "student." The category "friend" (friend, companion, associate, confidant) had 300 responses, while the category "student" (student, studier, learner) was almost as large, with 284 responses. Other frequent responses were "female" (57 responses), "roommate" (51 responses), and "girlfriend" (40 responses). Some categories had only one response, e.g., "complainer," "diabetic," and "ex-wife." To investigate the relationship between situation and identity, we first compared important and unimportant identities and then focused on the two largest identity categories of friend and student. By using two identities in this way, we could compare two possibly different processes.⁵

Identity Importance and Selection

Of the 1,312 identities, 845 (64 percent) were listed among the 10 important identities of the

background questionnaire, 98 (7 percent) were listed among the second list of 10 relevant, but less important, identities, and 369 (28 percent) were not on either list. Comparing the frequency of important versus less important identities in the situations, we learn that the important identities were invoked much more frequently ($X^2_{(1)} = 591.74, p < .001$). As hypothesized, the importance of an identity within a specific ecological context is strongly linked to its being selected in a situation.

As an aside, we observe that important or salient identities, in addition to being invoked more often in situations, were differentially evaluated from the less important identities. Rosenberg (1979, p. 266) indicated that "the good things are the ones that matter and the bad things are the ones that do not." The reverse is also true: Things that matter are better, stronger, and more active than things that matter less. The semantic-differential ratings of the identities from the background questionnaire on the dimensions of evaluation, potency, and activity showed that, in all cases, the average ratings of the 10 important identities were significantly more "good" ($t = 5.25, p < .01$), more "potent" ($t = 2.01, p < .05$), and more "active" ($t = 2.23, p < .05$) than the average ratings of the 10 less important identities. In invoking the more important, central, or salient identities in situations, people also invoked those identities that are the source of higher self-esteem, stronger feelings of potency, and feelings of being active.

Situational Variation in the Meaning of Student and Friend

We now examine some of the sources of variation in meanings of situations. We used ordinary least squares⁶ to analyze determi-

⁵ We used Box's M test (Morrison 1976, p. 252) to test the equality of the covariance matrices of the variables for the identities of student and friend. In this way, we are testing the equivalence of any underlying causal structure among the variables. The results of this test indicate that the covariance matrices are not equivalent and that the two identities are involved in different causal structures ($X^2_{(136)} = 365.12, p < .001$).

⁶ One of the problems of using this experiential-sampling methodology is that the data contain both within- and between-person variation. We examine average within-person effects. To use the appropriate error term in our test of significance, we analyze all responses, controlling for variation between respondents by including $N-1$ dummy variables (where N is the number of respondents). In this way, the regression results represent average within-person effects (as in analysis of covariance), and hypotheses are tested with the appropriate error term and are not biased by

Table 1. Perceived Meanings of "Student" Situation in Terms of Evaluation, Potency, and Activity as a Function of "Student" Identity and Situational Constraints (Standardized Regression Coefficients—Average Within-Person Effects)

	Evaluation	Potency	Activity
SITUATIONAL CONSTRAINTS			
(Why are you here?)			
Wanted to be here	.38**	-.36**	-.09
Had to be here	-.05	.23**	.15*
Other wanted me here	.13*	.00	.13 ⁺
In transit	.02	-.13*	.04
Control over surroundings			
	-.01	-.13*	-.02
Involved in situation	.14**	-.04	.14*
WHY THIS IDENTITY			
I chose it	.01	.00	-.00
Others chose it	.10	-.11	.05
Situation demanded it	.04	-.01	.11*
Is important to me	.14*	.16**	.17*
Is important to others	-.03	-.12	-.18*
Additional R ²	.18	.22	.09
N	284	284	284

* $p < .05$.

** $p < .01$.

⁺ $p < .10$.

nants of situation meanings, including the participants' reasons for being in the situation, how much control they felt they had, how involved they were, and the reasons why they had their identities. We present results of this analysis for situations involving the student identity in Table 1 and the friend identity in Table 2.

The data reveal that ratings of the situations in which a respondent had the identity of student or friend were related to the circumstances surrounding the reasons why respondents were there. In both cases, respondents evaluated the situation as more positive when they wanted to be there, when they felt more involved, and when being a student or friend was important. Feeling compelled to be in the situation reduced the feeling of goodness of the friend situation, while being present at another's request increased the evaluation of the student situation.

between-person variation. The R^2 reported represents the proportion of variance accounted for by the variables *over and above* that accounted for by the dummy variables. Separate between-person regressions were analyzed using mean values on each variable for each person. These are not reported here.

Table 2. Perceived Meanings of "Friend" Situation in Terms of Evaluation, Potency and Activity as a Function of "Friend" Identity and Situational Constraints (Standardized Regression Coefficients—Average Within-Person Effects)

	Evaluation	Potency	Activity
SITUATIONAL CONSTRAINTS			
(Why are you here?)			
Wanted to be here	.26**	-.19**	-.02
Had to be here	-.23**	.34**	.03
Other wanted me here	.08	-.08	.06
In transit	-.03	.01	.04
Control over surroundings			
	.07 ⁺	-.07	.06
Involved in situation	.15**	-.12*	.30**
WHY THIS IDENTITY			
I chose it	-.01	.04	-.04
Others chose it	-.08	.07	-.13 ⁺
Situation demanded it	-.05	-.14*	.01
Is important to me	.13*	-.17*	.12
Is important to others	-.09	.06	-.13
Additional R ²	.19	.22	.08
N	300	300	300

* $p < .05$.

** $p < .01$.

⁺ $p < .10$.

With respect to potency ratings of the situation, wanting to be present reduced it in both the friend and student situations, while having to be there increased it. The importance of the identity, however, had different effects in the two situations. When the student identity was important, the potency feelings were increased, perhaps reflecting situations where some actors (e.g., professors) had coercive power over students,⁷ while feelings that the friend identity was important reduced the potency feelings of friend situations (reflecting interaction among status equals). Also, when respondents were more involved in the situation, the perceived potency of the friend situation was reduced, while feeling in control reduced the perceived potency of the student situation.

Finally, the perceived activity of both student and friend situation was increased when respondents felt involved. Additionally,

⁷ Smith-Lovin (1987, p. 82) notes that the potency dimension, when applied to situations, "... seems to contrast settings in which some actors have the potential for coercive power over others with those in which power is more evenly distributed" (see also Kemper 1978).

for the student situations, perceived activity was increased when the respondents felt that the student identity was important, but it was reduced when the student identity was important to the other (perhaps the professor).

In sum, the perceived meanings of both student and friend situations varied as the respondents moved through the day and were functions of their involvement in and control of the situations, as well as of the reasons that they had the identities in those situations. The functions, however, differed for the two situations, reflecting the different dynamics of friend interactions (status equals) and student situations (often involving status unequals).

The second part of the model, in Tables 3 and 4, depicts the student and friend self-meanings on the dimensions of evaluation, potency, and activity as functions of the same variables considered above plus the meanings of the situation. By far, the strongest relationships are between the ratings of the

Table 3. Perceived Meanings of "Student" Situational Identity in Terms of Evaluation, Potency and Activity as a Function of Situational Constraints, and the Meaning of the Situation (Standardized Regression Coefficients—Average Within-Person Effects)

	Evaluation	Potency	Activity
SITUATIONAL CONSTRAINTS			
(Why are you here?)			
Wanted to be here	.00	-.12*	-.07
Had to be here	.11 ⁺	-.18**	.06
Other wanted me here	-.20**	.07	.05
In transit	-.07	-.05	-.09 ⁺
Control over surroundings	-.03	-.04	.05
Involvement in situation	-.05	.02	-.05
WHY THIS IDENTITY			
I chose it	.20**	-.10*	.09
Others chose it	.04	-.04	.03
Situation demanded it	-.04	-.01	.09 ⁺
Is important to me	.12*	.07	.30**
Is important to others	.08	.01	-.14 ⁺
SITUATIONAL MEANINGS			
Evaluation	.59**	.05	-.14*
Potency	-.01	.54**	.07
Activity	.04	.15**	.37**
Additional R ²	.33	.28	.26
N	284	284	284

* $p < .05$.

** $p < .01$.

⁺ $p < .10$.

Table 4. Perceived Meanings of "Friend" Situational Identity in Terms of Evaluation, Potency, and Activity as a Function of Situational Constraints, and the Meaning of the Situation (Standardized Regression Coefficients—Average Within-Person Effects)

	Evaluation	Potency	Activity
SITUATIONAL CONSTRAINTS			
(Why are you here?)			
Wanted to be here	-.08	.13*	-.11 ⁺
Had to be here	.07	-.05	.03
Other wanted me here	-.01	-.04	.07
In transit	.03	.05	-.03
Control over surroundings	-.01	-.03	.03
Involvement in situation	.04	.04	.02
WHY THIS IDENTITY			
I chose it	.03	-.09*	.07
Others chose it	.00	-.11	-.04
Situation demanded it	.09 ⁺	.02	.01
Is important to me	.16**	-.08	-.03
Is important to others	.25**	.10	.13
SITUATIONAL MEANINGS			
Evaluation	.42**	-.27**	.21**
Potency	-.06	.27**	-.06
Activity	.02	-.09	.31**
R ²	.17	.18	.14
N	300	300	300

* $p < .05$.

** $p < .01$.

⁺ $p < .10$.

situation on the dimensions of evaluation, potency, and activity and the self-ratings of student or friend identity on these dimensions. Evaluation of the situation was strongly related to self-evaluation. People feel good about themselves when they are in good situations. Ratings of the potency of the situation was strongly related to self-ratings of potency (people feel strong in powerful situations—though this relationship is considerably weaker for the friend identity than the student identity). And ratings of the activity of the situation strongly related to self-ratings of activity. While some cross-dimensional relationships exist between meanings of the situation and self-meanings, these are not systematically patterned for the two identities.

Although other variables are not as strongly related to self-meanings of student and friend identities, they have some effect. For the student identity, respondents had higher self-evaluation when they chose being a

student and when they felt that it was important. However, when in situations where someone else wanted them to be, they had lower self-evaluations. Self-feelings of potency in the student identity were lowered when participants felt they had to be present (for example, having to go to class). Finally, feeling active was enhanced when the student identity was important to them.

For the friend identity, the model operated somewhat differently. Respondents' self-evaluations became more positive when the identity was important to them and to others (see Table 4). Feelings of self-potency were increased when respondents wanted to be in the situation, but were decreased somewhat when they chose the identity of friend themselves (perhaps trying too hard to be a friend and please the other, thus losing some control over their own behavior). Self-feelings of activity as a friend (unlike those as a student) did not seem much affected by variables other than the ratings of the activity of the situation.

DISCUSSION

The purpose of this study was to demonstrate how experiential sampling methodology can be used to test important hypotheses derived from identity theory. We wanted to explore the relationship between a person's self-concept or identity and the situation. From an interactionist perspective, we conceptualized "situation" in terms of *the meanings of social categories referring to place and to relationships*, not to places and relationships themselves. While this is akin to viewing situation as a cognitive category, it is more than that because meaning is more than cognition; it is also *affect*. In a similar vein, we conceptualized identities both in terms of the social categories referring to persons and by the meanings of these categories.

In undertaking this investigation of the relationship between situation and self, we wanted to avoid having people respond to hypothetical "situations," recollect "situations" in which they participated, or engage in participant observation. By using experiential sampling methodology (ESM) to tap into the identities of people in daily situations, we obtained random samples of the participant's thoughts and feelings in situations as they were occurring.

One of the problems of ESM is that, while

we capture information *in situ*, we do not capture the exact flow of events or hard evidence on the issue of causality. Our conceptualizations have most of the cause flowing from situation to identity (Stryker 1980), and for that reason we have regressed identity meanings on situation meanings. However, it is possible that identity meanings influence situation meanings if people either choose situations in which meanings accord with their identities or attribute meanings to the situations that accord with their current self-meanings. We label as alternative 1 the model where cause flows in the other direction. In alternative 2, both the rated meanings of the self and the situation are outcomes of a common factor, as in a halo effect. People who feel a certain way rate both themselves and the situation similarly. Alternative 2 suggests that the correlations between situation and identity are spurious.

While it is not possible to definitively distinguish among these alternatives in the present data, some evidence is suggestive. First, in alternative 2, the fact that the relationship between identity and situation differs between the student and friend identities reduces the likelihood that our results reflect a halo effect. A halo-effect model would operate the same way across different identities. Additionally, when a common factor is extracted from various identity and situation measures, the loadings differ markedly across identities, unlike what we would expect from a halo-effect model.⁸

With respect to alternative 1, we examined the residual correlations among identity measures (controlling for situation) and situation measures (controlling for identity), in an attempt to indicate the extent to which correlations among identity measures might be a function of situation measures, and vice versa. While these analyses are too numerous to present,⁹ we find that the data are better fit (smaller residuals) with a model that makes identity a function of the situation, rather than the reverse. In sum, until it can be shown otherwise, we believe that our model best represents the data.

Overall, we found a strong relationship between the identities people have and the situations they are in. Consistent with the

⁸ These tests are available from the first author.

⁹ They are available from the first author.

principle of semantic congruity, a strong link existed between the meaning of the situation in terms of its evaluation, potency, and activity and the meaning of the identity held in that situation. Because previous work (Burke and Reitzes 1981) established a link between the meaning of a person's identity and the meaning of her or his behavior when acting in that identity (semantic congruity), this finding completes the picture and shows that all three components are closely related: identity, situation, and behavior. The work of Heise and Smith-Lovin on affect control theory (Heise 1977, 1979; Heise and Smith-Lovin 1981) points to the abstract linkages among these components in people's ratings of the meanings of words in sentences. We see here, by using ESM, that these abstractions also hold for people in their everyday lives.

Our study also demonstrated how a relatively new electronic technique can be used successfully to investigate social-science variables that are often difficult to measure. We do not argue that ESM is a better method than retrospective techniques or participant-observer reports, but it is an *alternative* method that researchers can use to counteract some of the other methods' weaknesses. If identity researchers use multimethod approaches to study this topic, the field as a whole will benefit.

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THE COLLECTIVE BEHAVIOR OF FADS: THE CHARACTERISTICS, EFFECTS, AND CAREER OF STREAKING*

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Nine themes on the effect of participation, identification, and career of fads, which appear in the collective behavior literature, are tested with data on 1,016 incidents of streaking at colleges and universities. Streaking diffused suddenly, gained quick acceptance, and was short-lived. Its diffusion corresponds to a positively skewed, rapidly accelerating slope, a brief and unstable asymptote, and a precipitous decline. The probability of streaking on college campuses increased with the institutional prestige of neighboring campuses that had experienced streaking, the number of sanctions they applied, the accuracy of the mass media coverage of previous streaking events, the level of complexity of previous streaking events, and the sociocultural heterogeneity of schools at risk of adoption. The research results support the predictions of the emergent-norm framework of collective behavior. Streaking incidents were heterogeneous suggesting that the oddness, impulsivity, inconsequentiality, novelty, and ahistoricity of fads have been exaggerated in the literature. Reformulations of the established conceptualization of fads are suggested.

INTRODUCTION

This paper studies the streaking fad on college campuses in the United States during the spring of 1974. It examines the extent to which the fad corroborates the characteristics, effects, and career of fads specified in the literature. We first review the social science literature on the conception of fads and then present an alternative analytical model of the spread of streaking. After describing our data and methods, we present the results of the research and our conclusions. Finally, we suggest reformulations of the established conceptualization of fads.

REVIEW OF THE LITERATURE

Fads—a nontraditional preoccupation by dif-

fuse collectivities on a circumscribed object or process¹—are often considered as a form of collective behavior. Beginning with Park and Burgess (1924), fads have been listed as a substantive topic of interest for the field of collective behavior (e.g., Dawson and Gettys 1929; Turner and Killian 1957; Lang and Lang 1968; Lofland 1981). Yet, fads are seriously understudied. Although specific discussions of them abound, no one has presented a systematic conceptual and theoretical statement about them. We organized the major ideas on fads according to how they are identified, the effects of participation in fads, and their careers. Three themes focus on how to identify fads, one centers on the effect of participation, and five on their careers. We then test these themes with information on the fad of streaking.

In the last two decades, a number of ideas on collective behavior have been discarded and new ones have taken their place. These

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¹ This definition stresses the social aspects of fads. It agrees with the minimum consensus among those who have defined the phenomenon. (Jolly 1967; Anderson 1977). The similarities and differences among fads. Crazes, and fashion are worth an extended discussion that we will not attempt.

ideas concern panic flight, rioting crowds, participation in crowds, emergent behavior in natural disasters, and social-movement mobilization. This paper further revises our understanding of collective behavior by examining a prominent fad and questioning dominant social science definitions of it as homogeneous, odd, novel, nonutilitarian collective behavior, spread by imitation or the activation of the latent tendencies of people. For heuristic purposes, we use the emergent-norm conceptual framework in collective-behavior theory, which emphasizes similarities and continuities between collective behavior and institutionalized social life and documents the emergence of new norms, values, social relations and communication patterns in the social organization of fads (Turner and Killian 1987). This theoretical framework models the spread of fads, not as contagion or convergence behavior, but as instances of innovation diffusion. It also supports our hypothesis that fads are heterogeneous expressions of social life and, like all other forms of social life, have histories, multiple effects, and meaningful normative constraints.

Descriptive Characteristics of Fads

(1) *Homogeneity*. Frequently cited as a major feature of fads is the idea that fad behavior is homogeneous in different times and places (e.g., Turner and Killian 1957, p. 207; Sebold 1968, p. 219; Lofland 1981, p. 445). (2) *Novelty*. Fads are presumed to involve novelty (e.g., Davis 1949, p. 79; Lang and Lang 1961, p. 526; Fairchild 1965, p. 113) and new behavior that differs from existing routines. This idea first introduced by Ross (1915, p. 80) persists in the notion that fads have no histories (e.g., Blumer 1968, p. 344; but see Klapp 1972, p. 308). (3) *Oddness*. Fads seem to be odd by existing cultural norms. They evoke social disapproval because those not involved in them perceive fads as ridiculous, dangerous, immoral, bizarre, if not deviant behavior (e.g., Davis 1949, p. 79; Jolly 1967, p. 14; Blumer 1968, p. 276; Lofland 1981, p. 445). Earlier writers saw fads as irresponsible or irrational (e.g., Bernard 1926, p. 546; Sapir 1931, p. 139; Davis 1949, p. 79).

Effects of Participation

(4) *Nonutilitarian Behavior*. Irrespective of

the reasons people participate in fads,² the literature portrays fad behavior as nonutilitarian and lacking in consequentiality for their participants (e.g., LaPiere 1938, p. 177; Smelser 1962; Brown 1965, p. 719; Klapp 1972, p. 314; Lofland 1981, p. 445). This is often attributed to the content areas in which fads occur. The words *frivolous* and *superficial* are frequently used by earlier and later writers to refer to fads, while few writers argue that fad behavior occurs in all areas of social life and deserves serious consideration (e.g., Bernard 1926, p. 545; Turner and Killian 1972, p. 130).

Career of Fads

(5) *Suddenness*. Fads appear suddenly and are unexpected. They are said to be the result of impulse and are perceived as not involving calculated acts or deliberate adoption, but as spontaneous caprice (e.g., Gold 1964, p. 256; Blumer 1969, p. 276; Lofland 1981, p. 445). (6) *Rapid Spread*. Fads spread rapidly and, unlike fashions that diffuse downward, originate in any social stratum (e.g., Doob 1952, p. 386; Lang and Lang 1961, p. 486; Fairchild 1965, p. 113). Fads are limited to a smaller proportion of the population than are fashions (David 1949, p. 179). Some writers believe adolescents are particularly vulnerable to becoming involved in fads (e.g., Sebold 1968), although most emphasize that fads will spread only in certain segments of the population. (7) *Quick Acceptance and Short-Lived*. Fads obtain rapid acceptance and popularity. They peak quickly, with a rapid acceleration in the rate of adoption (e.g., Blumer 1968, p. 344). The most frequent generalization about fads is that they are short-lived (e.g., LaPiere 1938, p. 187; Klapp 1972, p. 312; Lofland 1981, p. 445; Brown 1965, p. 717; Turner and Killian 1972, p. 129). Once they pass they are gone forever.

Convergence and Contagion

Analytically, the spread of fads is interpreted as a form of imitation or manifestation of

² The psychological needs of participants often are viewed as crucial in the adoption of fad behavior. Personal peculiarities such as "obsession" are sometimes used, although abnormality is usually denied.

latent tendencies (for criticisms of these approaches, see Turner 1960; Milgram and Toch 1969). The latent or *convergence* explanation of the spread of fads has taken different forms. Doob (1952, p. 396) states that "innovations become fads only when they are perceived by people and when they satisfy some predispositions." Other writers (Blumer 1968, p. 342) suggest that fads, like fashions, "may be ways of rediscovering the self through novel yet socially sanctioned departures from prevailing social forms". LaPiere's (1938, pp. 463-64) emphasis on tension that is felt by collectivities of people and released during the *spree* continues to have resonance, as in Rose's (1982, pp. 193-94) *revels*. Better known is Smelser's (1962) idea of the function that positive wish fulfillment has in the *craze*, in which large numbers of people share predispositions in the form of anxieties, ambiguities, and strains that are resolved through the development and resolution of a collective fantasy.

The imitation or *contagion* explanation is one of the oldest in the literature (e.g., Dawson and Gettys 1929). The contagious spread of faddish behavior is caused by suggestion, imitation, identification and circular interaction, and rumor (e.g., Young 1944, p. 327; Gold 1964, pp. 256-57), which amplified by the mass media (Miller and Borhek 1978), creates impulsive and highly emotional crowd behavior.

The Model of Adoption

The emergent norm framework endorses a *social-interaction* view of the spread of fads. From this newer perspective, fads, like other forms of collective behavior, occur in novel, unexpected, or "out of the ordinary" circumstances in which people are forced to create meanings to orient their behavior. They do this while interacting with others in the absence of preestablished procedures for coordinating actions and identifying members, leaders, and shared objectives. This emergent "definition of the situation" limits and justifies the behavior of the collectivity and is changed by it (Turner and Killian 1987, p. 3).

The emergence of shared rules, meanings, and emotions in collective behavior depends on communication and cues in the situation rather than on physiological arousal. The diffusion of fads follows preexisting networks

of relations and involves learning behavior from others (Perry and Pugh 1978, pp. 58-75). As Sullivan (1977, p. 50) has pointed out, research indicates that, as predicted by the emergent-norm framework, participants have diverse motives, goals, and patterns of involvement. This suggests that participation in fads does not call for special sociopsychological explanations.

This emergent-norm perspective informs our effort to develop a macrolevel innovation adoption model of streaking. Here, the probability of adopting the innovation is affected by changes in the context in which individuals learn and accept an emerging collective definition of the situation.

We hypothesize that five contextual components affect the emergent definitions of the situation and the probability of the occurrence of faddish behavior in the schools at risk of adoption. These include the institutional prestige of the neighboring schools that previously experienced streaking; the severity of social control used by those schools; the accuracy of the mass media reports of the streaking events; the heterogeneity and complexity of previous streaking events; and the sociocultural heterogeneity of the schools at risk of adoption.

This adoption model assumes temporal dependence among fad episodes, so that earlier events affect the occurrence and characteristics of later events. This assumption is also made in the analysis of social movements (Oliver 1985, p. 17) and diffusion of innovations (e.g., Rogers and Shoemaker 1971). In both fads and social movements, individuals, not groups, typically decide whether to participate. However, a macrolevel explanation of fad adoption is possible because individuals decide in interaction with others in a social context in which the emerging collective definition of the situation importantly determines the person's course of action.

We derive five predictions from the model of adoption:

School prestige. the higher the social prestige of the *relevant* significant schools that previously experienced the fad, the greater the probability that other schools will also adopt the innovation. We assume that schools belong to larger systems of social stratification that affect what goes on in them. This systemic nature of the units in which collective behavior may occur has been noted

in the diffusion of social-movement activities (Oberschall 1980, p. 52). In the present context, the nearer and higher the prestige of the schools that experienced the fad, the greater the probability that other schools will follow suit.

Sanctions. The greater the sanctions and controls that innovating schools practiced toward fad participants, the *lower* the probability that other schools will follow suit. This is because, as in social movements, "diffusion occurs partly as a result of a reassessment by potential activists and participants and by authorities of the chances of success and the costs of collective action after the outcomes of similar collective action elsewhere become known to them" (Oberschall 1980, p. 52).

Mass media. The more accurately mass media covered significant schools that experienced the fad, the greater the probability of subsequent adoption. The dissemination of information about streaking events occurred through various means such as visits of students to other campuses, personal and telephone conversations, and letters, putting students from one university or college in touch with those at other schools. The accuracy of the mass media coverage of previous streaking episodes also affected the sort of information about the fad that prospective adopters received (Hirsch 1972).

Complexity and heterogeneity. The greater the complexity and heterogeneity of previous streaking events, the greater the probability that schools will adopt the fad. The innovation is more likely to be adopted when the complexity of the previous incidents of the fad in neighboring schools is greater. The complexity of streaking incidents is a stimulus for potential adopters. For example, if many males and females, students and nonstudents, streaked repeatedly day and night, on and off campus, then many categories of persons in other nearby schools could identify with the faddish behavior. As a result, the events are no longer performed by only the rowdy but become acceptable to many potential adopters. Similarly, heterogeneity *among* streaking events in different schools increases the accessibility of the cultural innovation to potential adopters.

The importance of the degree of complexity of previous events for modeling the diffusion of collective-behavior forms is recognized by a number of scholars. For

instance, Oberschall (1980, p. 48) argues that the success of collective action is measured by its impact on public opinion, which is a function of the number of participants in the episode. The greater the number of participants, the greater the impact on public opinion, the greater the success of collective action, and the higher the probability of subsequent collective action. Similarly, McPhail (1984), focusing on more elementary forms of collective behavior, states that extraordinary behavioral configurations have to be audible and visible to be recognized and considered before they can be adopted or rejected. Extraordinary behavior that is recurrent, widespread, very audible, and visible is more likely to be noted and considered.

The degree of heterogeneity *among* previous streaking events also affects the probability that schools will adopt the fad. Adoption is more likely when previous streaking events differ widely in their complexity, since they would offer a wider range of available adoptive-action patterns. The risk of adoption increases when previous incidents of streaking occur in a variety of ways and settings, individually and collectively, so that potential adopters have many different "scripts" for participating in the fad. Alternatively, the adoption of an innovation ends not only because fewer people are practicing it, with the consequent decline in its value to prospective adopters, but also partly because the faddish idea is exhausted and cannot generate new behavioral scripts; homogeneity sets in (Oberschall 1980, p. 51; Turner and Killian 1957, p. 211).

School heterogeneity. We test the effect of social setting on the adoption of fads by hypothesizing that the greater the sociocultural heterogeneity of the schools at risk of adoption, the greater the probability of adoption. Social structure is generally downplayed in the sociological literature as an important influence on the occurrence and complexity of faddish events. Fads, unlike fashion, for example, are believed to occur in any type of society, traditional or modern (Gold 1964, p. 257; Blumer 1968, p. 344). In more extreme versions of this view, the universality of fads is said to result from the fact that "they have a natural root in human nature" (Blumer 1968, pp. 344-45).

We endorse the alternative view that fads are rooted in specific social organizations. This view is voiced only occasionally and is

applied primarily to modern societies with complex mass-communication systems (e.g., Meyersohn and Katz 1957; Jolly 1967). According to this view, a fad is more likely to occur and elicit more complex and heterogeneous behavior, the greater the level of social and cultural heterogeneity of social organizations (Smelser 1962, p. 175). Two facilitating factors are increasing level of heterogeneity of the norms and values governing social interaction in social organizations and increasing levels of social mobility and social differentiation of social organizations.

The sociocultural context of collective behavior supplies resources for organizing it and helps define the situation as one that may or may not be rewarding for participation in fads. The greater the heterogeneity of the social organization, the greater the freedom the individual has from overarching hegemonic value systems, the greater the opportunity and desire of people to experiment and try the new, the more likely that some people will have interests that correspond to the innovation developing elsewhere, and the greater are the mobilizable resources available for the adoption of the innovation (Mohr 1978). Blau and Slaughter (1971) have shown that student demonstrations are more likely to occur in large academic institutions than in small ones.

We have identified nine major themes in the relevant literature concerning the characteristics, effects, and career of fads. From our model of adoption, we derived five predictions. Do these themes and predictions stand up in our study of streaking?

DATA AND METHODS

The data are derived from a national study of the streaking fad that appeared in the spring of 1974 (Taylor and Quarantelli 1974), which concentrated on institutions of higher education, since they were the major settings where streaking events occurred (e.g., Evans and Miller 1975; Anderson 1977). Some of the data were obtained from a mail survey of all (1,543) colleges and universities in the continental United States with more than 1,000 students. A 24-item, mostly forced-choice questionnaire was mailed to the deans of student affairs or equivalent officials.

We received a 66-percent return during April 24-May 4, 1974. for analytical purposes we assumed that the fad lasted from February 16 to April 15, 1974 (see Evans and Miller

1975); most of the mass media attention to streaking occurred during this period.³ Actually, streaking spanned a longer period. The questionnaire asked about the social characteristics of participants in streaking, date of initiation and duration of the behavior, specific locales where the behavior occurred, administrative and social-control actions taken, attitudes toward streaking by students, faculty, campus and local police, and local mass media outlets. Information about the schools was added including predominant racial composition of the student body, religious affiliation, if any, enrollment size, geographical location, type of school, school prestige, the number of fraternities and sororities,⁴ and the gender composition of the student body. Using this information, a comparison showed no significant statistical differences between schools that replied and those that did not.

The survey results were supplemented by field observations. Participant observations were made on a large university campus where streaking occurred over a period of a week. Reports of volunteer observers and participants were obtained. These data were supplemented by observer reports from several other campuses. Interactional patterns between streakers, spectators, and social control personnel were observed. Moreover, the observational data permitted us to reconstruct the sequences of streaking events on one major campus.

We systematically collected all available college and university student newspapers in one state (about two dozen) that carried articles on streaking and supplemented them with 40 student newspapers and three dozen

³ The number of streaking events occurring in the 16 time periods for which there is information was divided by the number of days in the time periods to arrive at the average number of streaking events. These proportions are used to calculate the graphs in Figure 1.

⁴ *Number of college fraternities and sororities.* We calculated the number of college fraternities and sororities active in 1974 on each of the campuses in the sample (Robson 1977, pp. 45-244). *School prestige.* The prestige score of each school was obtained from the Carnegie Foundation's (1976) classification of institutions of higher education in the United States. The prestige variable ranges from a score of 1 for the most prestigious "doctorate granting research universities I" to 15 for the least prestigious "institutions for untraditional study."

daily newspapers from throughout the country. We used this documentary material to describe the mass media coverage of the streaking fad presented in Figure 1, double-check information, derive ideas about the variety of streaking behavior, and check on the validity of the responses. In all cases where we could find information, the responses of the deans were supported by the mass media accounts.

Construction of Measures

Complexity. We used a nonhierarchical clustering algorithm (Ray 1982, pp. 433–47) to classify the observed instances of streaking in terms of their similarities on 10 internal attributes of the streaking events for which there was numeric information. These attributes were (a) the length of streaking incidents; (b) the total number of streakers; (c) the location of streaking; (d) the number of places streaking occurred on campus; (e) the units in which streaking occurred; (f) the time of day; (g) the gender of streakers; (h) whether streaking was done to establish or break a record; (i) whether nonstudents participated in the streaking events; and (j) whether “mooning” (baring the buttocks) occurred. We chose these attributes because they could rank all the streaking events and because they represented conceptually different, independent dimensions of the streaking events (cf. Landecker 1981, pp. 46–47).

The Q-cluster analysis used the Euclidian distance between observations to create nonoverlapping disjointed clusters. The procedure uses nearest-centroid sorting to identify the initial central observation or seed of each cluster, group observations closest to these changing seeds, and calculate the final clusters (Ray 1982, pp. 433–34; Romesburg 1984, pp. 295–96). We did not standardize the data matrix because the 10 attributes used in the cluster analysis satisfied ordinal scale requirements. We identified 12 clusters, crosstabulated them (not shown, available on request) with each of the 10 attributes used to construct them, and ordered them for level of complexity of the streaking events composing them, forming the complexity variable.

Alternative cluster solutions with different numbers of clusters (not shown) did not offer as clear an ordering of clusters. Different classifications of streaking events would have been possible if we had information at the

individual level on the division of labor, leadership network, patterns of communication and collective symbolism, and social relations and mobilization experiences of streakers. Instead, 10 attributes tapped aggregate internal characteristics of these events. Clusters vary within as well as among themselves. The similarity of the streaking events in a cluster, in terms of their characteristics in the 10 internal attributes, is only approximate. The clusters are composed of relatively similar streaking events rather than identical ones. The relative heterogeneity of the streaking events within each cluster is not assessed here.

Statistical Model

The Multiple Classification Analysis (MCA) of the complexity variable was done with and without (not shown) the outliers of each of the clusters. We used the Euclidian distances of the cases from the final seeds of their respective clusters to identify the outlying cases. The MCA results did not differ significantly either in the size and direction of the bivariate and multivariate coefficients or in the overall goodness of fit as measured by multiple R^2 . Consequently, we did not remove these outliers from the results presented in Table 2. MCA assumes the applicability of an additive statistical model and is insensitive to interactive effects. Analysis of variance was used to identify interactive terms among the factors in the MCA models; we found none. Unless otherwise stated, all variables proved statistically significant at the .05 level.

In the analysis of the adoption of streaking, we used Cox's (1972) proportional-hazard linear model for a single dependent variable using the Breslow modification for tied data. This is a multivariate linear-probability model appropriate for dichotomous dependent variables with censored information (i.e., observations in which the event does not take place during the specified time period—streaking did not occur at some schools during the 16 time periods of observation) and nonrepeated events (Allison 1984). This technique assesses the effect of the explanatory variables using the censored data, controlling for censoring bias. One of the advantages of this technique is that no specific distributional assumption is needed for the hazard rate (streaking rate). The model assumes that the natural logarithm

of the (unspecified) ratio of the hazard rates is a linear function of the explanatory variables. Specifically, the model assumes that

$$\ln h(t; x) = \sum b_i x_i$$

$$h(t)$$

where $h(t; x)$ is the hazard rate for an individual with variable vector x , and $h(t)$ is the hazard rate with $x=0$, the baseline hazard function. The interpretation of this model is like that of the usual least-squares regression. The b -coefficients in this model are like unstandardized regression coefficients, except that no intercept is estimated.

According to the model, the hazard rate for school i , $h_i(t)$, is

$$h_i(t) = g(t) \exp(\sum b_j x_{ji})$$

Here $g(t)$ is the overall hazard rate that applies to all schools at risk. If all the b_i are zero, all of the schools would have identical probability of streaking over time. However, if all the h_i are not zero, the probability of streaking would be a function of the explanatory variables. Each b_i can be interpreted like a regression coefficient. For example, a coefficient of $-.1$ means that increasing the value of the explanatory variable by 1 decreases the log of the hazard by $.1$. In other words, an increase of 1 (unit) in this variable reduces the hazard by 10 percent. The percent change in the hazard rate is found by computing $100(\exp[-.1] - \exp[0])$, which reduces to $100(\exp[b] - 1)$.

The PHGLM program in SAS (Harrell 1983, pp. 267-94) was used to analyze the data. This is a stepwise regression program for time nonvarying explanatory variables. It computes maximum likelihood estimators for Cox's regression. Along with each regression coefficient, the program gives a p -value and a "partial R " (for each regression coefficient). The partial R -values are between -1 and 1 and provide a measure of the partial contribution of each variable adjusted for sample size. Thus, the R s give the relative "importance" of each variable in the equation. The R_i coefficient indicates the relationship between the explanatory variable and the hazard rate and can be interpreted as a partial correlation. A positive coefficient indicates an increase in the value of the hazard rate. In addition, the program computes an overall R -statistic that is analogous to the usual multiple correlation coefficient adjusted for sample size. This

statistic tells us how much variation in the dependent variable is attributable to variations in the explanatory variables. However, this R , unlike the usual multiple R , can increase when variables are deleted from the model.

RESULTS

Characteristics

Homogeneity of streaking events. The established view predicts that one category or cluster accounts for most streaking events, because their characteristics would be similar. We reexamine this assumption of homogeneous behavior. While at one level of analysis, streakers do the same thing everywhere (i.e., take off their clothes in public), the emphasis on homogeneity ignores variation in fad behaviors and in the social relationships among participants. The range of this variation is captured by the two polar unitary concepts of mass and compact crowd (Blumer 1964; 1969), which highlight the continuum of sociocultural complexity of streaking behaviors and relationships. Following conventional usage, we distinguish mass from compact crowd. In the crowd, the participants interact with one another, define and orient their joint action by communicating, and develop a division of labor and a common goal to guide their behavior.

We assume that faddish behavior varies in its degree of homogeneity (Lange and Lang 1961, p. 179; Landecker 1981). A fad is composed of many spatially and temporally separate incidents that generate and reflect, to a greater or lesser extent, the new emergent norms and values that guide and justify the enactment of the new social relations and use of material culture characterizing the fad. We should be able to order incidents in a fad in terms of their degree of sociocultural complexity.

This alternative formulation implies that different subtypes of streaking events appear, which order themselves on a continuum from the most fleeting, inchoate, and masslike manifestations to its most complex, developed, compact crowdlike state. This predicted ordering of the clusters was called a complexity continuum (cf. Lang and Lang 1961, p. 179; Anderson 1977, p. 224).

The attributes used to construct the clusters are an important set of conceptual dimensions of the social organization of fads. As an ideal

type, the most complex or highly crystallized social structure would involve hundreds of men and women, both students and nonstudents, streaking together over extended periods of time by themselves and in groups of various sizes, motivated to establish or to break a school record, and engaging in mooning. The event would occur during both day and night, on and off campus, and in many different locales on campus. The least complex social structure would have the reverse set of characteristics. None of the clusters duplicated these two ideal extremes. Nevertheless, the results of the cluster analysis support the prediction that there are several types of streaking events that can be ordered according to level of complexity.

Cluster 1 is the least complex form of social organization. It represents very fleeting, masslike instances of streaking. Sixty-nine percent of the events in this cluster involved only one or two persons. In fact, in 84 percent of the cases, only one person engaged in streaking at any given time. In almost all (98 percent) of these instances, males and females streaked separately and nonstudents did not participate (91 percent). Almost three-quarters (72 percent) lasted only one day, and most (95 percent) did not involve establishing a record for mooning (99 percent). The great majority of events (80 percent) occurred only during the day, on campus (95 percent), and in fewer than two different places on campus (97 percent).

Cluster 12 differs most from cluster 1. It is the most complex form of social organization found in this research; 73 percent of its streaking events involved 100 or more males and females (88 percent), with students and nonstudents streaking together (68 percent). Of these events, 97 percent were lengthy (about a week or more) and characterized by mixture of acting units (91 percent). Sixty-four percent involved breaking or establishing a school record, as well as mooning (73 percent). Almost all occurred both at day and night (94 percent), on and off campus (76 percent), and in three or four places on campus (82 percent). The remaining 10 clusters fall between these two extremes.

The distribution of the complexity variable has a boundary region, composed of clusters 6 and 7, and two opposite areas. One of these areas is made up of clusters 8 through 12 and accounts for 25 percent of the streaking events. Very complex streaking events are

quite rare; cluster 12 accounts for 5 percent of all streaking events. The other area of decreasing complexity is formed by clusters 5 through 1 and accounts for 62 percent of all the streaking events. Highly uncrystallized streaking events are quite common; one-fifth of all streaking events are in cluster 1, the least complex cluster we observed. These streaking episodes most commonly resembled the mass behavior that previously has been assumed to characterize fads.

Equally important, however, many streaking events were highly heterogeneous. At first glance, streaking behavior appears to be homogeneous, acted out by members of a mass. Some of the events labeled streaking do fit this definition, but a majority do not. Despite limitations inherent in the simple act of appearing and running round in the nude, there was substantial variation in how the act itself was organized. Contrary to traditional views, which tend to emphasize the similarity and homogeneity of fad activity, streaking showed considerable variation and a wide range of innovations. There were important differences in the way the behavior was organized and enacted on different campuses (see below).

Novelty. The characterization of fad behavior as novel and odd is also suspect. The duration of the streaking fad considerably predated and postdated public mass media attention. The behavior had been institutionalized on some campuses for decades prior to 1974, and streaking incidents were still emerging in some schools months and even years after they had stopped elsewhere. Newspaper articles document that running in the nude, while perhaps not commonly known as streaking, was widely practiced before and after the 1974 incidents (Anderson 1977, p. 227; Evans and Miller 1975, p. 402). The long-term existence of the behavior makes the origin of the fad difficult to determine. Multiple claimants to creatorship of streaking exist (e.g., on Long Island during the American Revolutionary War, by American students vacationing in Mexico in the spring of 1965, at the University of Maryland, Whitworth College, University of Colorado at Boulder, Southern Methodist University, Air Force Academy, in the San Fernando Valley, in Lakewood, California, in Westchester, New Jersey). It is probable that streaking, like other fads, has multiple origins. Streaking was not novel to some

segments of the population. There is always a pool of potentially faddish behaviors practiced by individuals or small groups in society (cf. Aronson 1952; Miller 1985, p. 154), and, like social problems (Blumer 1971), social movements (Lofland 1977), and fashion (Meyersohn and Katz 1957), only a few fads are legitimized, becoming part of universal culture.

Oddness. In most instances, streaking was defined in the student subculture and by school social-control agencies as harmless fun (e.g., Grimes, Pinhey, and Zurcher 1977, p. 1226; Anderson 1977, p. 225; Evans and Miller 1975, p. 408), acceptable in certain locations on campus and not in others (e.g., it was generally taboo to streak in classes where tests were being given). Moreover, the nudity involved was considered nonsexual by students and social-control agents. A new set of norms emerged, creating the context of the activity. This symbolic redefinition of fads is an important precondition to ensure their legitimacy; they must be perceived as odd, but not too odd. Otherwise, public disorder, rather than faddish behavior, occurs. Modern-day fads do not exhibit the complete social transgression of the festivals of antiquity; they are not "full and blasphemous experience" (Duvignaud 1980, p. 15).

Streaking was interpreted as deviant behavior on some campuses, usually by school officials. In some of these instances, stiff sanctions led to conflicts, which in a dozen cases produced major riots (Evans and Miller 1975, p. 407). While we do not have sufficient information to study this issue, we conjecture that there is an element of play in activity fads such as streaking (Heckel 1978, p. 147), where reactions occur within the limits imposed by the emergent consensus. The game ends when the lines are breached. This interpretation supports Brown and Goldin's (1973, p. 131) emphasis on the transactional character of social control in instances of faddish behavior. Social-control agents adjust their actions to often-conflicting expectations of powerful constituencies (Anderson 1977, p. 232).

Effects of Participation

Nonutilitarian behavior. Streaking often had noticeable and important consequences. Like cults (Quarantelli and Wenger 1973) and fashions (Simmel 1957), participation gener-

ated new feelings of cohesion and separateness. Streaking was consequential at different levels of analysis. Apart from the obvious fun, streaking was used by small groups and residents of dormitories on campus to compete for status (e.g., Heckel 1978, p. 147). Interschool competition was also quite common (Anderson 1977, p. 223), increasing solidarity among the students. It forced television networks, school administrations, and police departments to develop new policies toward streakers. City councils and state legislatures throughout the country reacted by passing new laws on indecent public exposure and lewd and offensive behavior. Streaking was seen as a threat by dedicated nudists, who worried about its impact on public opinion about nudism. Streaking was widely acknowledged in the press as an act of intergenerational symbolic protest, influenced by the then-new Woodstock sexual morality of the 60s and 70s. Deaths occurred in streaking-related accidents. Tass publicized streaking as yet another indication of the rebelliousness and unhappiness of young people in "crisis-plagued" capitalist societies. Finally, streaking had economic consequences: J.C. Penney and Sears Roebuck canceled the marketing of new lines of tennis shoes with "streaks" labels, and apparel manufacturers began selling streaking medallions, uniforms, and, for fashion-minded women, costly belts made of golden elk skin and pheasant feathers. It is clear that even an activity fad like streaking has noticeable effects on society. Product fads such as the citizen's band radio fad of 1976 and 1977 have even greater impact (Miller 1985, p. 141; see also Skolnik 1978). More broadly, the consequentiality of fads is documented in the history of technology; significant technological innovations (e.g., the bicycle) often appear as fads before they become permanent elements of the culture.

Career of Fads

Descriptive model of diffusion. The results support the prevailing descriptive model of the career of fads, which assumes a sudden, rapid, widespread, short-lived diffusion (e.g., Miller 1985, pp. 144-48). As shown in Figure 1, the streaking fad can be represented by a positively skewed, rapidly accelerating slope, a brief but unstable asymptote, and a precipitous decline.

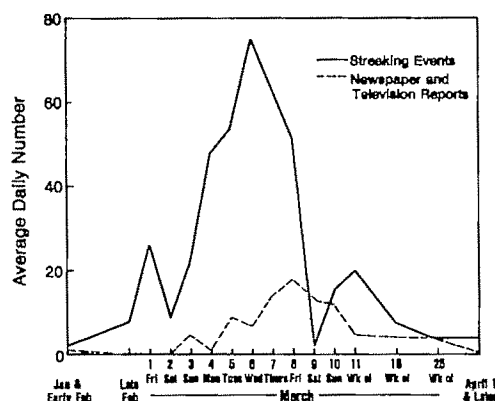


Fig. 1. Incidents and Newspaper and Television Reports of Streaking

Figure 1 illustrates the overall frequency of occurrence of streaking events between February and April 1974. The average daily number of newspaper articles and television reports on streaking events in institutions of higher education in the United States is also plotted. Ten streaking events had occurred by the end of February. This increased to 55 events during the first three days of March. The highest average daily frequencies occurred during the next five days (March 4–8). This peak was caused in part by the March 5 report on streaking by the three major television networks. Daily frequencies of streaking events then dropped considerably, averaging four by the middle of April. It must be stressed, however, that the fad behavior did not disappear altogether. Schools experienced streaking incidents both before and after the streaking fad.

Our initial speculation was that, as with fictitious riots and imaginary panics, a discrepancy would exist between the events and the reporting of the events. This was not the case; the line for the mass media reports resembles the line for the events, although it trails them.

The sudden increase in the frequency of streaking events shown in Figure 1 was not solely a result of individuals experiencing an impulse to streak. Rather, a great deal of planning and organization went into the streaking events that we observed or for which documentary evidence could be obtained. Some division of labor was nearly always present; streaking without an audience has no meaning (McFadden 1974). Most cases involved organizers, actors, spectators, reporters and TV camera crews, and social-control personnel (e.g., school administra-

tors, police) in the compact collectivities. The act of streaking was only the surface manifestation of pre- and post-group interactions that took many forms.

Streaking often involved calculated, planned actions by small groups like fraternities, sororities, or residents of floors or wings of particular dormitories (Anderson 1977, p. 227). The most active core often consisted of members of such preexisting social networks. Conscious selection governed time and place of the event. Usually, during the large-scale, highly crystallized instances we observed, a quasi-scheduling of the behavior occurred as the result of informal understandings among social control agents and the organizers of the collective behavior. Some events were pre-planned, to the extent that explicit negotiations about the organization and limits of allowable behavior took place between social control agents and groups of potential participants.

Actual manifestors of the behavior were chosen ahead of time. Personal skills, such as the ability to run fast, ski, ride motorcycles, or parachute, were needed. There was also a "streaking uniform," consisting of white tennis shoes, and ski caps, stocking caps, or Halloween masks. In many instances, streakers had a supporting cast, ranging from "transportation corps" and "musical bands" to "public relations agents" spreading the word about the forthcoming attractions. An anthem, "The Stripper," became quite popular.

The Model of Adoption

Single-variable models. Results of proportional-hazard linear modeling of the adoption of the fad of streaking are presented in two sections: the bivariate relationships, showing the effect of each predictor on the risk of streaking, and the overall stepwise reduced multivariate model, to assess the relative importance of the predictors.⁵

⁵ *Lagged variables:* The variables in components 1, 2, 3, and 4 of the proportional-hazard linear model of the adoption of streaking are one time period-lagged variables. These variables represent mean averages computed separately from the schools experiencing streaking for each combination of the states in the country and the 16 time periods under observation. Schools that did not experience streaking constituted the censored cases

As predicted by our model, greater prestige of schools previously experiencing streaking increased the probability of adoption ($R = -.13$, $p < .0001$) (cf. Evans and Miller 1975, p. 406).

The variables in the second component contradicted our predictions; the greater the social reactions and sanctions evoked by previous streaking episodes, the higher the probability of subsequent adoption. Results show that the risk of streaking increased as police took action against the streakers, as administrators received complaints, took positions, or made statements against streakers, and as greater administrative punishments were meted out to streakers. The effect of sanctions was to increase the probability of adoption of the streaking fad in schools still at risk; the deterrent effect postulated in the adoption model was not observed. The exception to this generalization is the finding

in the analysis (Allison 1984, pp. 27–29). The test of the adoption model is restricted to states with 38 or more schools in the sample to insure that there would be mean average scores for each time period for each of the states and that there would be sufficient number of cases to make these mean average scores stable. There are 364 schools in this test. The first component in the model of the diffusion of streaking is the institutional prestige of the schools. The second component is represented by eight lagged variables. Two questions ask whether or not campus and city police departments took action against the streakers; two questions ask if the reactions of students and faculty members were mostly positive, mixed or negative; and four questions ask about the reaction of school administrators. The third component in the model is represented by three lagged variables that ask if the streaking event was correctly, partly correctly, or incorrectly reported by student newspapers, local newspapers, and local radio and television stations. The fourth component is operationalized by two variables, measuring the level of complexity of streaking events and the standard deviation of this variable. The fifth component in the model is represented by three *nonlagged* variables. The first variable presents information on the size of the student enrollment. It ranges from 1 for schools with enrollments of about 1,000 students, to 17 for schools with more than 30,000 students. The second variable is the type of school, ordered from high to low heterogeneity as follows: universities, colleges, branches of universities, two-year community colleges, technical schools, and professional schools (Carnegie Foundation 1976). The third variable is the number of college fraternities and sororities.

Table 1. Predicting the Risk of Adoption of Streaking Behavior: Single-Variable Models

Predictors	Beta	Chi-Square	R
Component 1. Characteristics of sending schools			
Prestige of schools streaking previously	-.15	50	-.13
Component 2. Societal reactions			
Reaction of city police	-.37	5	-.03
Reaction of campus police	-.18	2*	.00
Reaction of students	-.64	14	-.06
Reaction of faculty	-.01	00*	.00
Public position by administration	1.51	75	.15
Administration-received complaints	2.05	103	.18
Number of punishments	1.10	45	.12
Official statement	1.17	36	.11
Component 3. Mass media coverage			
Coverage by student newspapers	-.53	18	-.07
Coverage by local city newspapers	-.57	36	-.11
Coverage by local radio and T.V. stations	-.37	20	-.08
Component 4. Characteristics of previous streaking events			
Degree of complexity	.26	122	.20
Standard deviation of complexity	.14	22	.09
Component 5. Social heterogeneity of schools at risk of adoption			
Size of student enrollment	.08	26	.09
Type of school	-.18	20	-.08
Number of fraternities	.01	30	.10

that the greater the extent of negative reaction of students in campuses that had experienced streaking, the greater the people's unwillingness to adopt the fad.

Results support the prediction that the probability of adoption increased when previous streaking events were correctly reported by student and local radio and television stations. Likewise, predictions for the fourth component of the model are supported. The risk of adoption increases with greater levels of complexity of previous streaking events ($R = .20$, $p < .0001$) and with greater degrees of heterogeneity among these events ($R = .09$, $p < .0001$).

Table 1 also supports the hypothesis that the greater the sociocultural heterogeneity of the schools at risk of adoption, the greater the probability of adoption. The probability of

schools experiencing streaking incidents increased directly with size of student bodies ($R = .09, p < .0001$) and whether the schools at risk were universities and colleges rather than technical institutes or professional schools ($R = -.08, p < .0001$). Moreover, the greater the number of fraternities and sororities on campuses, the greater the probability of adoption of the streaking fad ($R = .10, p < .0001$).

Increasing levels of contextual heterogeneity lead to increased levels of complexity. Type of school, size of enrollment, number of fraternities, prestige of school, and social control of the schools were used as indicators of campuses' social and cultural heterogeneity (schools in the sample with predominantly black student bodies, with consequent high

level of cultural homogeneity, did not experience streaking events.) Complexity, the dependent variable, is the numeric ordering of the clusters. It varies from 1 (most uncrystallized) to 12 (most crystallized). The mean of complexity for the entire sample of schools is 4.91 (see Table 2).

Seventy-eight percent of the 1,016 schools for which there was information experienced streaking events. The analysis in Table 2 is limited to these schools and does not predict the probability that streaking would occur. Rather, the hypothesis is that if streaking occurs, the level of complexity of streaking events increases directly with the heterogeneity of the social organization of the schools.

The results support the prediction that greater sociocultural heterogeneity is associ-

Table 2. Multiple Classification Analysis of Level of Complexity of Streaking Events with Characteristics of Schools as Factors

Factors	N	Unadjusted Deviation from Grand Mean ^a	Adjusted Deviation from Grand Mean ^b
Number of fraternities			
1. 0-5	429	-1.18	-.41
2. 6-12	78	.06	-.16
3. 13-23	93	.64	.23
4. 24-40	91	1.61	.53
5. 41-142	92	3.22	1.31
		(.44)	(.17)
Size of school enrollment			
1. <4000	452	-.89	-.35
2. 4,000-8,000	141	.43	.37
3. 8,001-16,000	123	1.27	.38
4. 16,000 >	67	2.74	.85
		(.34)	(.12)
Prestige of school			
1. High	111	2.82	.80
2.	295	.66	.47
3.	105	-.11	.39
4.	263	-1.84	-1.00
5. Low	9	-1.25	-.45
		(.45)	(.21)
Type of school			
1. University	156	2.50	.58
2. College	398	.04	.18
3. Technical institute, other	23	-.74	.15
4. Professional schools	6	-.91	-1.24
5. Two-year community college	167	-2.19	-.83
6. Branch of university	33	-.55	-.56
		(.44)	(.15)
Social control of school			
1. Private-secular	131	.36	.08
2. Private-Catholic	49	-.16	-.51
3. Private-other religions	90	-.27	-.58
4. Public	513	-.03	.13
		(.05)	(.08) ^c
Grand Mean	4.91		
Multiple R ²	.26		

^a Numbers in parentheses are eta coefficients.

^b Numbers in parentheses are betas (standardized regression coefficients).

^c Significance of $F = .22$.

ated with greater degree of complexity. Schools with larger student bodies experienced more complex streaking episodes than smaller schools; schools with higher levels of prestige experienced more complex streaking events than their less prestigious counterparts; universities and colleges had more complex streaking events than other types of schools; and, finally, schools with more fraternities and sororities experienced more complex episodes. Schools with the most fraternities (41 or more) had the highest unadjusted mean complexity score observed (8.13). This finding corroborates Anderson's (1977) observations of the importance of fraternities in streaking. Contextual resources, such as those mobilized by fraternities, are important facilitators of faddish activities. This finding also supports the prediction of emergent-norm theory (Turner and Killian 1987, p. 9) about the importance of preexisting social groupings in collective behavior and is similar to the findings of studies of social-movement dynamics that have shown the importance of mobilizable social and cultural resources, such as those available to preexisting organizations and to friendship and kin networks in the creation of social-movement actions.

Multiple-variable reduced model. Relative statistical importance of the predictors in the adoption model is shown in Table 3; variables that were statistically insignificant at the .01 level are excluded. The overall R is .38.

All five components of the adoption model are represented by the predictors in this reduced multivariate solution (see Table 3). The sign of all but one of the predictors (reaction of campus police) remain unchanged from the bivariate analyses. Reaction of faculty, insignificant in a bivariate context, is

significant now; the risk of adoption increases as the reaction of the faculty to the fad becomes more negative. The most powerful predictor of adoption of the fad was the degree of complexity ($R = .17$) of previous streaking episodes, representing the strength of the stimulus that previous streaking events provided to potential adopters. This was followed in importance by reaction of campus police ($R = .14$), reaction of faculty ($R = .11$), and coverage by local city newspapers ($R = -.11$). These results show that the relative prestige of schools and degree of sociocultural heterogeneity of potential adopter schools are less important components in explaining adoption.

The relative stability of the signs and sizes of the coefficients in the bivariate and multivariate contexts argue against spuriousness. For instance, while it is true that greater sanctions attract more mass media attention, which in turn increases the risk of adoption, both sanctions and mass media have separate, significant effects on adoption.

CONCLUSION

We tested the extent to which the streaking fad corroborates established social science conceptions of fads. The results of this research suggest some important reformulations. Contrary to conventional wisdom, we have shown that streaking events have clearly identifiable social structures that are heterogeneous rather than homogeneous. The events are not random and can be ordered in terms of sociocultural complexity, which increases with the social heterogeneity of the schools. Also, contrary to the predictions of the conventional view, streaking was not entirely novel and odd, and planning and emergent normative limits or controls were as important as enthusiasm and impulse. Moreover, the behavior was meaningful and consequential to those enacting it.

The conventional view of fads fared better in its view of the diffusion process, which, in the streaking fad, exhibited the expected frequency distribution. However, the mechanism producing that distribution did not conform to the classical conception of convergence or contagion. Instead, the innovation-adoption model used assumed a broader sociosymbolic view of the adoption process in which people construct an emergent definition of the situation prior to acting. It showed that

Table 3. Predicting the Risk of Adoption of Streaking Behavior: Multiple-Variables Reduced Model

	Beta	Chi-Square	Partial R
Prestige of schools			
streaking previously	-.09	7	-.04
Reaction of campus police	2.42	64	.14
Reaction of students	-1.30	16	-.07
Reaction of faculty	1.35	40	.11
Public Position			
by administration	1.25	19	.07
Coverage by local			
city newspapers	-.82	35	-.11
Degree of Complexity	.41	85	.17
Size of student enrollment	.05	8	.05
Overall model		414	.38

streaking increased with (1) institutional prestige of nearby schools that had previously experienced streaking; (2) number and severity of sanction associated with previous streaking events; (3) accuracy of the mass media coverage of previous streaking events; (4) level of complexity of previous streaking events; and (5) sociocultural heterogeneity of the potential adopter schools.

These results broadly conform to the emergent-norm framework used in the study of collective behavior. They support the framework's conceptualization of fads as a type of diffuse collectivity made up of compact and diffuse crowds. In the streaking fad, diffuse crowds facilitated member recruitment into compact crowds, precipitated compact-crowd episodes, maintained continuity in crowd action and in the fun and games spirit of the fad, and often provided the occasion for compact-crowd events to unfold (e.g., Turner and Killian 1987, pp. 154-55). Likewise, mass communication and preexisting group ties were important in the diffusion of the streaking fad. A division of labor and clear normative limits emerged and structured collective behavior. The mobilization of the participants in the fad was quite complex, evincing emotion and rationality as complementary and reinforcing orientations to collective action.

Fads are amenable to systematic sociological analysis and proposition-testing. So long as fads are assumed to be isolated collective outbursts in which individuals consumed by some contagion engage for a short while in aberrant behavior, fads can be dismissed as unimportant for our understanding of social organization. Yet, this paper shows that the fad of streaking was spawned by social organization; it was a product of group life.

Fads ought to receive higher priority by specialists in collective behavior and social movements. As recommended by Blumer (1969) and Turner and Killian (1972), there have been a few, primarily descriptive studies of fads in science. In spite of this attention, however, much remains to be done, especially for fads in other spheres such as technology, religion, or the family. Clearly, to paraphrase Blumer's comments (1969) on fashions, fads are not restricted to the area of costume and adornment, are not socially inconsequential, and are not necessarily aberrant and irrational. Since fads are collective behavior, our knowledge of them will

help us understand other forms of collective behavior, such as social movements.⁶ This comparative sociology of fads will require the systematic accumulation of information about many specific fads. Comparing these incidents will enable us to develop more satisfactory theories about fads.

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⁶ We have shown five similarities between fads and social movements. *First*, adoption of faddish behavior, and presumably involvement in social-movement actions as well, is affected by people reacting in solidarity to what occurred before. Sanctions are construed to make participation more risky, exciting, and challenging, and, therefore, more fun. Sanctions mobilize commitment and increase the cultural importance, meaning, and attractiveness of the innovative fad behavior. *Second*, the mobilization of participants in fads is complex. As shown, increasing levels of complexity and accuracy in mass media coverage increase the chances of adoption. Greater complexity represents higher levels of collective euphoria stimulating further adoption. The fact that the mass media and social-control responses facilitate the adoption process implies that potential adopters develop an informed view of the situation prior to acting collectively. Affect and logic, and emotion and rationality are complementary, reinforcing orientations to social action, rather than mutually incompatible. *Third*, the fad of streaking involved the emergence of norms that established the limits of compact boisterous crowd behavior and that facilitated the occurrence of mass behavior. Like social-movement actions, faddish behavior generates its own normative constraints. *Fourth*, the activity fad (Lofland 1981, p. 445) of streaking, and other types of fads as well, resemble social movements in that they are diffuse collectivities of compact aggregates and masses. *Fifth*, corresponding with the contemporary emphasis on resources in the study of social movements, we have shown the effect that pre-established student groups and the social heterogeneity of the schools had in increasing the crystallization of streaking events.

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THE CONSEQUENCES OF PROFESSIONALIZATION AND FORMALIZATION IN THE PRO-CHOICE MOVEMENT*

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Resource mobilization theorists have argued that professionalized social movements emerge as more sources of funding become available for activists who make careers out of being movement leaders. This paper analyzes organizational case histories from the pro-choice (abortion rights) movement to explore the consequences of professional leadership and formal structure in social movements. Five general propositions are drawn from the case of the pro-choice movement: (1) professional movement activists do not initiate movements and create new tactics; the roles of movement "professional" and movement "entrepreneur" are distinct; (2) professional movement leaders tend to formalize the organizations they lead; (3) formalized social movement organizations (SMOs) help maintain social movements when environmental conditions make mobilization difficult; (4) professional leaders and formalized SMOs stimulate the use of institutionalized tactics; and (5) professionalization and formalization facilitate coalition work.

As a result of the conceptual work of McCarthy and Zald (1973, 1977), the notion of the "professionalized" social movement is now firmly associated with the "resource mobilization" approach to collective action (cf. Jenkins 1983). They argue that professionalized movements are increasingly common as a result of increases in sources of funding for activists who make careers out of being movement leaders. In contrast to what they term "classical" movement organizations, which rely on the mass mobilization of "beneficiary" constituents as active participants, "professional" social movement organizations (SMOs) rely primarily on paid leaders and "conscience" constituents who contribute money and are paper members rather than active participants. Importantly, this analysis suggests that social movements can be launched with adequate funding. "Entrepreneurs" can mobilize sentiments into movement organizations without the benefit of precipitating events or "suddenly imposed major grievances" (Walsh 1981) and without established constituencies.

McCarthy and Zald's analysis of profes-

sional movement organizations recognizes that there are different types of movement participants and different types of SMOs, which require different levels and types of participation. Although few theorists have expanded on the McCarthy-Zald analysis of professional movement organizations (exceptions are Cable 1984; Jenkins and Eckert 1986; Kleidman 1986; and Oliver 1983), such conceptual development is important because different types of organizational structures and participants have consequences for movement goals and activities. Examination of the effects of organizational leadership and structure is relevant to debates over movement outcomes, such as those generated by Piven and Cloward's (1977) thesis that large formal movement organizations diffuse protest.

This paper explores the consequences of professionalization in social movements by analyzing the impact of leadership and organizational structure in the pro-choice movement. My analysis is based on documentary and interview data gathered on the pro-choice movement (Staggenborg 1985) and focuses on a sample of 13 pro-choice movement organizations, including 6 national organizations and 7 state and local organizations from Illinois and Chicago (see Table 1). Documentary data cover the histories of the organizations from their beginnings to 1983.¹

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¹ Manuscript collections used include the Women's Collection at Northwestern University,

Table 1. Sample of National and State/Local Pro-Choice SMOs

	Dates
<i>National Organizations</i>	
National Abortion Rights Action League (NARAL), formerly National Association for the Repeal of Abortion Laws (NARAL) until 1973	1969–
Religion Coalition for Abortion Rights (RCAR)	1973–
Zero Population Growth (ZPG)	1968–
National Organization for Women (NOW)	1966–
National Women's Health Network (NWHN)	1975–
Reproductive Rights National Network (R2N2)	1978–1984
<i>State/Local Organizations</i>	
National Abortion Rights Action League of Illinois (NARAL of Illinois), formerly Illinois Citizens for the Medical Control of Abortion (ICMCA) until 1975 and Abortion Rights Association of Illinois (ARA) until 1978	1966–
Illinois Religious Coalition for Abortion Rights (IRCAR)	1975–
Chicago-area Zero Population Growth (Chicago-area ZPG)	1970–1977
Chicago Women's Liberation Union (CWLW)	1969–1977
Chicago National Organization for Women (Chicago NOW)	1969–
Chicago Women's Health Task Force (CWHTF)	1977–1979
Women Organized for Reproductive Choice (WORC)	1979–

Fifty individuals were interviewed, including leaders and rank-and-file activists, who were active in the organizations during different periods. I analyze the changes in leadership and internal structures of the SMOs and the impact of these changes on the movement. In particular, I focus on changes in three major periods of the abortion conflict: the years prior to legalization of abortion in 1973; 1973 to 1976, when Congress first passed the Hyde Amendment cutoff of federal funding of abortion; and 1977–1983 following the anti-abortion victory on the Hyde Amendment.

I begin by making some conceptual distinctions among three types of movement leaders and two major types of SMOs and then use these distinctions to classify the organizations by structure (see Table 2). Next, I examine the impact of leadership on the formation of movement organizations and the formalization of SMOs. Then I examine the impact of formalization on the maintenance of SMOs, their strategies and tactics, and coalition work. Tables 3 through 6 summarize data for each SMO on the pattern of leadership and

structural influence. More detailed case material illuminates processes under certain circumstances that may be more generalizable. Finally, I argue that the professionalization of social movements and activists does not necessarily help expand the social movement sector by initiating activities and organizations, but that professionalization and formalization importantly affect the structure and maintenance of social movement organizations, their strategies and tactics, and their participation in coalition work.

CONCEPTUAL DISTINCTIONS

Types of Leadership in SMOs

With the professionalization of social movements and the availability of funding for staff positions, several types of leaders are found in SMOs (cf. McCarthy and Zald 1977, p. 1227; Oliver 1983, pp. 163–64). *Professional managers* are paid staff who make careers out of movement work. Professional managers are likely to move from one SMO to another and from movement to movement over their careers (see McCarthy and Zald 1973, p. 15). Two types of *nonprofessional leaders* are *volunteer leaders* and *nonprofessional staff leaders*. Volunteer leaders are not paid.²

which contains newsletters and documents from NARAL, RCAR, ZPG, CWLW, ICMCA/ARA/NARAL of Illinois, and several coalitions; the papers of ICMA/ARA/NARAL and Chicago NOW at the University of Illinois, Chicago; the CWLW papers at the Chicago Historical Society; the Lawrence Lader papers at the New York Public Library; the public portions of the NARAL and NOW papers at the Schlesinger Library of Radcliffe College; and private papers provided by informants.

² Volunteers may be "professionals" in the sense that they spend many years, perhaps a lifetime, doing movement work. However, they differ from professional managers in that they do not earn a living through movement work.

Table 2. Organizational Structures of Sample SMOs over Time

SMO	Pre-1973	1973-76	1977-83
<i>National</i>			
NARAL	informal	transition to formalized	formalized
RCAR		formalized	formalized
ZPG	informal	informal	transition to formalized
NOW	informal	transition to formalized	formalized
NWHN		informal	transition to formalized
R2N2			informal
<i>State/Local</i>			
ICMCA/ARA/NARAL	informal	informal	formalized
IRCAR		informal	transition to formalized
Chicago-area ZPG	informal	(inactive)	(inactive)
Chicago NOW	informal	transition to formalized	formalized
CWLU	informal	informal	
CWHITF			informal
WORC			informal

Note: Details on organizational structures of sample SMOs are provided in Tables 3 and 4.

Nonprofessional staff leaders are compensated for some or all of their time, but are not career activists. Rather, they serve as SMO staff for a short term and do not regard movement work as a career. As I argue below, there may be significant differences in orientation of leaders within this category based on whether the nonprofessional staff leader is temporarily dependent on the movement income for a living. Those who are dependent on the income may behave like professional managers in some respects, whereas those with other sources of income (or those willing to live at subsistence level) may behave more like volunteers. All three types of leaders are, by definition, involved in organizational decision making. All three are also included in the category of *activists*, as are other nonleader members who are actively involved in the SMO as opposed to being paper members.

Paid leaders, then, may or may not be "professionals" in the sense of making careers out of movement work and, as Oliver (1983, p. 158) shows, may come from the "same pool" as volunteers. Of course, leaders who do not begin as movement professionals may become career activists. Both professional and nonprofessional leaders learn skills (e.g., public relations skills) that they can easily transfer from one organization to another and from one cause to another. Both professionals and nonprofessionals can serve as *entrepreneurs*—leaders who initiate movements, organizations, and tactics (cf. Kleidman 1986, pp. 191-92). However, as I argue below, nonprofessional leaders are more likely to initiate movements (as opposed to SMOs) and tactics than are professionals.

Types of Movement Organizations

Changes in the structures of SMOs have occurred along with the professionalization of social movement leadership. In contrast to "classical" SMOs, which have mass memberships of beneficiary constituents, McCarthy and Zald (1973, 1977) argue that movement organizations with professional leadership have nonexistent or "paper" memberships and rely heavily on resources from constituents outside of the group(s) that benefit from movement achievements. Professional movement activists are thought to act as entrepreneurs who form such organizations by appealing to conscience constituents. The difficulty with this characterization of the structural changes in SMOs led by professionals is, as Oliver (1983) notes, that many such SMOs have both active and paper memberships. Similarly, organizations may rely on a mix of conscience and beneficiary constituents for resources.

An alternative characterization of structural differences in SMOs is based on differences in operating procedures. *Formalized* SMOs³ have established procedures or structures that enable them to perform certain tasks routinely and to continue to function with changes in leadership. Formalized SMOs have bureaucratic procedures for decision making, a developed division of labor with positions for

³ The term *bureaucratic* might be substituted for "formalized" (cf. Gamson 1975). However, I have used the latter because SMOs are never as bureaucratic as more established organizations such as corporations and government agencies (cf. Zald and Ash 1966, p. 329).

Table 3. Organizational Characteristics of Sample SMOs: Informal SMOs

SMO	Decision-making Structure and Division of Labor	Membership Criteria/Records	Connections to Subunits	Leadership
Pre-1973 NARAL	informal control by small group of leaders on executive committee; board of directors representative of state organizations had no power; little division of labor	list of supporters rather than formal members, not formally maintained	loose connections to completely autonomous organizational members	volunteers and one nonprofessional staff director
Pre-1977 ZPG	control by self-appointed board of directors; no participation by rank-and-file membership in national decision making; division of labor between Washington lobbying office and California office	dues-paying membership, but sloppy record keeping, little follow-up on members	loose connections to completely autonomous chapters	volunteers
Pre-1973 NOW	elected board and officers; major decisions made by membership at annual conference; division of labor between administrative office, public information office, and legislative office	dues-paying membership, lack of reliable membership records	very poor communication with chapters, lack of national-local coordination	volunteers
Pre-1977 NWHN	decision making by informally recruited board of directors and five founders; informal division of labor	local organizations signed up by founders, no criteria for active involvement	loose connections to completely autonomous organizational members	volunteers
R2N2	decision making initially done by membership at two annual membership conferences; later, regionally elected steering committee and annual membership conference; informal division of labor	membership open to any organization sharing principles; no criteria for active involvement	difficulty integrating many organizational members into organization	volunteers and one staff coordinator
ICMCA/ARA	informal decision making by board and executive director; informal division of labor created by director as needed	list of supporters rather than formal members	informal connection to autonomous "chapters" in other parts of state	volunteers and nonprofessional staff director
Pre-1977 IRCAR	Policy Council of informally selected individuals active in member denominations; informal division of labor among small group of activists	religious organizations in agreement with principles; no criteria for active participation	difficulty in involving subunits in organization	volunteer leaders and coordinator
Chicago-area ZPG	informal decision making and division of labor among small number of activists and coordinator	no formal membership or records	loose connections to area chapters until they declined	volunteers
Pre-1973 Chicago NOW	informal decision making by board consisting of most active members; informal creation of committees by interested members	dues-paying membership	committees form and act independently	volunteers
CWLU	decision making by steering committee and in citywide meetings of membership; many experiments with structure, attempts to involve all members	list of supporters, dues initially voluntary, later required but not always collected; anyone active in work group or chapter was a "member"	loosely connected work groups and chapters that were completely autonomous	volunteers and nonprofessional, part-time staff
CWHTF	informal decision making and division of labor by small group of activists	exclusive "membership" of small group of friends	no subunits	volunteers
WORC	changing structure consisting of steering committee and various issue and work committees; attempts to rotate tasks and include all members	list of supporters; members include anyone who participates	typically not large enough for subunits; committees form and dissolve as needed	volunteers and one part-time nonprofessional staff

Table 4. Organizational Characteristics of Sample SMOs: Formalized SMOs (including SMOs in transition to formalized structure)

SMO	Decision-making Structure and Division of Labor	Membership Criteria/Records	Connections to Subunits	Leadership
Post-1973 NARAL	decision making by elected board of directors, executive committee; division of labor by function with paid staff as lobbyists, media experts, fundraisers, etc.	dues-paying membership, professional direct-mail techniques	formalized connections to affiliates; training and funds provided	professional leaders along with volunteer board
RCAR	decision making by board of directors consisting of formal representatives of denominational members; division of labor by function using paid staff	denominations that agree with principles; expectation of active involvement	financial support to affiliates that report activities annually to national organization	professional leaders together with volunteer board members
Post-1977 ZPG	decision making by board of directors and staff; division of labor by function using paid staff	dues-paying membership, professional direct mail; list of active members who participate in letter writing	some financial aid for chapter projects; formal guidelines for chapters developed	professional staff along with volunteer board
Post-1973 NOW	decision making by elected board and officers and delegates at national convention; division of labor by function using paid staff	dues-paying individuals, professional direct mail; chapters	communication with chapters established as national organization expanded staff and increased finances; state and regional organizations created to further coordination	professional leaders
Post-1977 NWHN	decision making by formally elected board of directors; division of labor using paid staff	dues-paying membership, direct mail; attempts to actively involve organizational members	organization of first official chapters	professional staff together with volunteer board
NARAL of Illinois	decision making by board of directors elected on rotating basis; division of labor among committees using paid staff	dues-paying membership plus activists	committees created to perform needed tasks	professional director together with volunteer board
Post-1976 IRCAR	formally elected Policy Council consisting of representatives from member denominations; creation of area units of activists	denominations agreeing with principles; attempts to encourage more active participation	more formalized ties to members and creation of formal area units	paid part-time director and volunteers
Post-1973 Chicago NOW	elected officers and board of directors; committees based on priorities screened by board and voted by membership; division of labor increasingly based on function using paid staff	dues-paying members plus activists	committees tightly integrated into organization, no longer autonomous	professional staff and paid officers

various functions, explicit criteria for membership, and rules governing subunits (chapters or committees). For example, the formalized SMO may have a board of directors that meets a set number of times per year to make organizational policy; an executive committee of the board that meets more frequently to make administrative decisions; staff members who are responsible for contacts with the mass media, direct mail campaigns, and so forth; chapters that report to the national organization; and an individual rank-and-file membership. As I argue below, this type of SMO structure is associated with the professionalization of leadership. In contrast, *informal* SMOs⁴ have few established procedures, loose membership requirements, and minimal division of labor. Decisions in informal organizations tend to be made in an ad hoc rather than routine manner (cf. Rothschild-Whitt 1979, p. 513). The organizational structure of an informal SMO is frequently adjusted; assignments among personnel and procedures are developed to meet immediate needs. Because informal SMOs lack established procedures, individual leaders can exert an important influence on the organization; major changes in SMO structure and activities are likely to occur with changes in leadership. Any subunits of informal SMOs, such as work groups or chapters, tend to be autonomous and loosely connected to one another. Informal organizations are dominated by nonprofessional, largely volunteer, leaders.

The SMOs in my sample are classified by structure in Table 2 based on the above criteria; details explaining the classifications

are provided in Table 3.⁵ The major categories of formalized and informal SMOs are, of course, ideal types. In reality, some SMOs share elements of each type, often because they are in the process of changing structures. When SMOs formalize, they typically do so very gradually. Some SMOs look formalized on paper, but are informal in practice. Important differences also appear among SMOs within each of the two major categories (e.g., some are centralized and others decentralized; cf. Gamson 1975). Nevertheless, the two major types of SMOs do differ from one another in important ways discussed below.

THE IMPACT OF PROFESSIONAL LEADERSHIP

The Initiation of Social Movements

Because professional movement activists can easily transfer their skills from one movement to another, McCarthy and Zald suggest that professional activists are likely to become entrepreneurs who start new organizations in which to work. If this is the case, an increase in movement careers should help to expand the social movement sector. Grievances can be manufactured by professional activists and SMOs, making the formation of social movements at least partially independent of overt grievances and environmental conditions (cf. Oberschall 1973, p. 158).

The McCarthy-Zald argument has been challenged on grounds of lack of evidence that professional managers and their SMOs originate insurgent challenges, although they may play a role in representing unorganized groups in more established interest group politics (Jenkins and Eckert 1986, p. 812). In the case of the civil rights movement, researchers have shown that informal indigenous SMOs initiated and led the movement (Morris 1984; Jenkins and Eckert 1986). In the case of the pro-choice movement, all of the SMOs in my sample that were active in the early movement were informal SMOs (see Table 2). The leaders who initiated SMOs that formed in the period prior to legalization were all nonprofessional leaders, mostly volunteers (see Table 3).

⁴ I have used the term *informal* to describe this type of SMO structure for want of a more positive label. The terminology of the existing literature on organizations and social movements is inadequate. The term *classical* used by McCarthy and Zald (1973, 1977) does not describe the structure of the SMO. The more descriptive term *grass roots* implies a mass membership base that may or may not be present in either "formalized" or "informal" SMOs. The term *collectivist* used by Rothschild-Whitt (1979) refers to a specific type of decision-making structure which is distinguished from "bureaucratic" organization; not all informal SMOs are collectivist. Freeman's (1979, p. 169) term *communal* for "small, local, and functionally undifferentiated" organizations is inappropriate because not all informal SMOs are local organizations.

⁵ An appendix with further details on sample SMOs is available on request from the author.

Table 5. Consequences of SMOs: Informal Organizations

SMO	Maintenance/Expansion/Decline	Major Strategies and Tactics	Coalition Work
Pre-1973 NARAL	23 organizational members in states, 500-2,000 individual members, 1-2 staff, budgets of \$30-70,000	demonstrations, support for abortion referral services, coordination of state lobbying campaigns, encouragement of litigation	minor participation in short-lived coalitions
Pre-1977 ZPG	high of 400 affiliates, 35,000 members in early 1970s; drop to about 60 affiliates, 8,500 members with budget of \$350,000 in mid-70s	demonstrations, abortion referral work, state legislative lobbying, educational activities prior to 1973; Congressional participation in demonstrations on abortion	staff support for Congressional lobbying coalition after 1973
Pre-1973 NOW	initial membership of 1,200 individuals, 14 chapters; budget of \$7,000 in 1967	support for local demonstrations	minor participation in short-lived coalitions
Pre-1977 NWHN	initial participation of about 50 activists		no active participation
R2N2	50-90 affiliates, high budget of \$50,000; dissolution in 1984 due to lack of resources	demonstrations; grassroots organizing; petition campaign against Hyde Amendment; educational work	experienced great difficulty in attempts to participate in lobbying coalition, lack of communication with other SMOs in coalition
ICMCA/ARA	active core of 30-35, part-time director, mailing list of about 700 contributors up until about 1976, when organization declined to about 60 paying members	demonstrations, state legislative lobbying, encouragement of litigation, educational activities prior to 1973; continued state legislative lobbying, Congressional letter-writing campaigns, educational work until decline in 1976	minor participation in largely unsuccessful pre-1973 coalition and short-lived 1977 coalition
Pre-1977 IRCAR	small core of activists; initial budget of \$2,500, 8 denominational members, volunteer director through 1976	participation in demonstrations; lobbying in state legislature, letter-writing campaigns to Congress, educational activities	no major coalition work
Chicago-area ZPG	high of about 11 area chapters, low of 3 and small core of activists in early 1970s; largely inactive after 1973 with exception of failed attempt to revive the organization in 1977	participation in ICMCA demonstrations, lobbying activities prior to 1973; inactive after early 1970s	minor participation in largely unsuccessful pre-1973 coalition; endorsement of coalition activities in 1977 prior to dissolving
Pre-1973 Chicago NOW	about 20 active members, a few hundred paying members in early 1970s	participation in demonstrations, support for abortion referral work and support for ICMCA lobbying work by head of abortion committee	participation in short-lived coalitions
CWLU	200-300 active members, numerous chapters and work groups, mailing list of 900 by 1971; greatly reduced active membership and number of chapters and work groups by mid-70s; formally dissolved in 1977	demonstrations, illegal abortion service, educational work prior to 1973; community organizing project to improve access to abortion after legalization, pickets and meetings to pressure providers, formation of Health Evaluation and Referral Service to rate abortion clinics and influence standards of service delivery; decline in activity by 1975-76	participation in largely unsuccessful attempts at coalition work prior to 1973
CWHTF	never more than about 15 active members, dissolved in 1979	demonstrations, educational work to fight Medicaid funding cutoff in 1977	participation in short-lived coalition in 1977 characterized by a great deal of conflict
WORC	high of about 30 active members in late 1970s, decline to about 10 active members in early 1980s; 100-150 paying members	demonstrations, petition campaigns around Medicaid funding cutoffs and closing of public hospital abortion facility, educational work	experienced great difficulty in attempts to participate in Illinois Pro-Choice Alliance, eventually became inactive in coalition

Table 6. Consequences of SMO Structure: Formalized Organizations (including SMOs in transition to formalized structure)

SMO	Maintenance/Expansion/Decline	Major Strategies and Tactics	Coalition Work
Post-1973 NARAL	10,000 members, 4-8 staff, budget reaches \$200,000 by 1976; 40 state affiliates, 140,000 members, 25 staff, budget reaches \$3 million by 1983	Congressional lobbying, litigation from 1973 on; campaign work, PAC contributions, grassroots organizing beginning in late 1970s	began working in Congressional lobbying coalition in 1973; leadership role in lobbying coalition by mid- to late 1970s
RCAR	began with 24 organizational members, 13 affiliates, several staff, budget of \$100,000; 31 organizational members and 28 affiliates, 8-10 staff and budget of \$700,000 by 1983	educational work, Congressional lobbying since 1973; increased local organizing in late 1970s	began working in Congressional lobbying coalition in 1973; leadership role in lobbying coalition by mid- to late 1970s
Post-1977 ZPG	about 20 affiliates, 12,000 members, budget of \$650,000	Congressional lobbying	cooperation in letter-writing campaigns in response to alerts from coalition leaders
Post-1973 NOW	40,000 members, 700 chapters by 1974; budget of \$500,000 by 1976; membership reaches 250,000, budget reaches \$6,500,000 by 1983	Congressional lobbying work, educational work after 1973; political campaign work and PAC contributions by late 1970s	participation in Congressional lobbying coalition
Post-1977 NWHN	membership of 300 organizations, 13,000 individuals, budget of \$300,000 by 1983	educational work; Congressional testimony	participation in Congressional lobbying coalition
NARAL of Illinois	high of 200 active members, 4,000 paying members, budget of \$80,000, full-time director and 3-4 part-time staff in early 1980s	legislative lobbying in late 1970s combined with political campaign work in early 1980s	participation in coalitions in late 1970s; leadership role in Illinois Pro-Choice Alliance
Post-1976 IRCAR	mailing list of 600-15,000, 13 denominational members, part-time paid director, budget high of \$10,000	legislative lobbying, educational work; expansion of state organizing efforts in 1980s	participation in coalitions in late 1970s; increased role in 1980s
Post-1973 Chicago NOW	about 500 paying members, budget of \$10,000 in mid-1970s; about 50 active members, 3,000 paying members, budget of \$175,000 by 1984	legislative lobbying and political campaign work in late 1970s and 1980s	participation in lobbying coalition in late 1970s and 1980s

Professional managers may act as entrepreneurs in creating SMOs (as opposed to movements and collective action), but my data, together with cases from the literature, suggest that professionals are less likely than nonprofessionals to act as entrepreneurs. When professionals do initiate movement organizations, they are likely to be formalized rather than informal SMOs. Common Cause, for example, was initiated by a professional manager who created a formalized organization (see McFarland 1984). Many community organizations, which are often created by professional leaders, are also formally organized (see Delgado 1986). In my sample only the national Religious Coalition for Abortion Rights (RCAR) was initiated by individuals who might be called professional leaders; they included a staff member of the United Methodist Board of Church and Society. All of the other SMOs in my sample were initially organized by nonprofessional activists as informal SMOs (see Tables 2, 3, and 4). Significantly, RCAR is also distinctive in that it originated as a formalized organization to mobilize existing organizations for institutionalized tactics (e.g., lobbying Congress) in a period when the movement as a whole was becoming more established.⁶

Given the lack of evidence that movement professionals initiate movements and informal SMOs, it is necessary to reconsider the relationship between the roles of movement "professional" and movement "entrepreneur." McCarthy and Zald suggest that, in response to the availability of resources, movement professionals become movement entrepreneurs, initiating movement activities and organizations because they are career activists looking for preferences to mobilize. Although no systematic evidence on the entrepreneurial activities of professional and nonprofessional leaders has been collected, my data indicate that the roles of "entrepreneur" and "professional" are, in some cases, distinct (cf. Roche and Sachs 1965).

An example of a nonprofessional entrepreneur in the abortion movement is Lawrence Lader, a writer and family planning advocate

who published a book (Lader 1966) reporting on the large number of abortions being performed by licensed physicians in the U.S. and advocating legal abortion. After his research was published, Lader was inundated with requests for the names of doctors from women seeking abortions. He began to make referrals to women and then announced his referral service publicly as a strategy intended "to stir as much controversy and debate as possible while bringing the facts to the public" (Lader 1973, p. xi). Lader played a role in getting others to employ this strategy, including the clergy who founded the Clergy Consultation Services on Abortion (see Carmen and Moody 1973). He later helped to found NARAL in 1969 and, more recently, founded another organization, the Abortion Rights Mobilization. Although remaining intensely interested in abortion and related family planning issues, Lader has not made a professional career out of his movement work; he continued to pursue his career as a writer while playing an entrepreneurial role in the movement.

Examples of nonentrepreneurial professionals in the pro-choice movement who have moved among established movement and political positions include Karen Mulhauser, an executive director of NARAL who became the executive director of Citizens Against Nuclear War after leaving NARAL in 1981. The NARAL director who succeeded her, Nanette Falkenberg, had previously been involved in union organizing work. In Illinois, the first professional leader of NARAL of Illinois was involved in community organizing work before taking the position of NARAL executive director and became a staff member of a political campaign after leaving NARAL.

These examples suggest that different factors may be responsible for the creation of two distinct roles. Movement entrepreneurs, the initiators of movement organizations and activities, may become paid activists who benefit from the existence of the same resources that support professional managers, but they typically do not make careers out of moving from one cause to another and they may never find paid positions that suit them. Rather, they found movement organizations and initiate tactics for the same reasons that other constituents join them. That is, they have personal experiences and ideological commitments which make them interested in

⁶ The distinction between such formalized SMOs and interest groups or lobbies is not a sharp one (cf. Useem and Zald 1982). There is clearly a need for greater conceptual clarification of the differences between formalized SMOs and interest groups based on empirical research.

the particular issue(s) of the movement. They are also tied into the social networks and preexisting organizational structures that allow the movement to mobilize and are influenced by environmental developments (e.g., legalization of abortion in 1973) that make movement issues salient and provide opportunities for action (cf. Oliver 1983).

Professional managers, on the other hand, are not likely to be the initiators of social movements. They make careers out of service to SMOs and are often hired to come into SMOs that already have formal structures or are in the process of becoming formalized. Professional leaders are likely to care very much about the cause of the SMO—even if they aren't initially motivated out of particular concern for the issue(s) of the SMO. However, professionals' concerns with the particular causes of SMOs are part of their more general concern for a range of issues—the orientation toward social activism that made them choose a professional reform career.

Professionalization and the Formalization of SMOs

Not only are movement entrepreneur and professional distinct roles, but movement entrepreneurs and other nonprofessionals are likely to differ from professional managers in their organizational structure preferences. While McCarthy and Zald (1977) suggest that movement entrepreneurs create "professional" SMOs, my data support the argument that movement entrepreneurs prefer informal structures and may resist creation of formalized SMOs run by professional leaders. The professionalization of social movements (i.e., the rise of career leadership) is associated with the formalization of SMOs for two reasons: (1) professional managers tend to formalize the organizations that they lead; and (2) the SMOs that have the resources to hire professional managers are those with formalized structures.

Movement entrepreneurs prefer informal structures that enable them to maintain personal control. As the analogy to business entrepreneurs suggests, movement entrepreneurs are risk-takers (cf. Oliver 1983) who initiate movement organizations without certainty of success, just as capitalist entrepreneurs risk investment in new products. Like capitalist entrepreneurs, movement entrepre-

neurs are likely to be personally involved in the enterprise, desiring personal control over decision making because they have taken the risks to establish an organization or movement. In contrast to the professional manager who brings skills to an organization and expects to operate within an established structure, movement entrepreneurs may try to prevent the creation of an organizational structure in which decision making is routinized and, therefore, less subject to personal control.

The history of leadership in NARAL, which was founded in 1969 as the National Association for the Repeal of Abortion Laws, reveals that conflict between entrepreneurial leadership and formalization occurs in some circumstances. NARAL founders were not professional movement organizers in the sense of being career movement activists; rather, they were persons who had become dedicated to the cause of legal abortion as a result of their prior experiences, primarily in the family planning and population movements that provided the most important organizational bases for the rise of the single-issue abortion movement (see Staggenborg 1985). Because the decision-making structure was informal (see Table 3), a movement entrepreneur who became chairman of the executive committee exerted a large amount of control over the organization; as he commented in a 1984 interview about his own style of leadership:

Let's face it. . . . I don't believe in endless meetings, I like to make quick decisions. Maybe I acted unilaterally sometimes, although I was always careful to check with the executive committee. Some people objected to my calling [other members of the executive committee] and getting their approval on the phone. [But] we couldn't meet, we had to move fast, so I polled the exec committee around the country by phone. (Personal interview)

Although there were some disagreements among NARAL executive committee members in the pre-1973 years, the informal decision-making structure seems to have worked fairly well at a time when the movement was very young, abortion was illegal in most states, and it was necessary to act quickly to take advantage of opportunities for action and to meet crises (e.g., the arrests of leaders involved in abortion referral activities).

After legalization, however, conflict over the decision-making structure occurred as NARAL attempted to establish itself as a lobbying force in Washington and to expand by organizing state affiliates. At this point, there was a power struggle within the organization between long-time leaders and entrepreneurs of NARAL and newer activists who objected to "power being concentrated in the hands of a few men in New York City" and who supported having persons "who are doing the work of the field—the State Coordinators" on the board (documents in NARAL of Illinois papers; University of Illinois at Chicago). The latter faction won a critical election in 1974 resulting in a turnover of leadership on the NARAL executive committee. Although the executive committee remained the decision-making body of the organization, practices such as the use of proxy votes and phone calls to make important decisions were discontinued (personal interview with 1974 NARAL executive director), resulting in more formalized decision-making procedures that involved more activists at different levels. Another major change that occurred at this point was that for the first time the executive director and other paid staff became more important than the nonprofessional entrepreneurs as NARAL leaders. It was only with the defeat of movement entrepreneurs as organizational leaders that NARAL began to formalize and eventually grew into a large organization capable of acting in institutionalized arenas.⁷

⁷ The conflict between entrepreneurial and professional roles also became apparent to me when I interviewed the anti-abortion leader Joseph Scheidler as part of another study. Scheidler helped to form several anti-abortion groups and was fired as executive director from two organizations for engaging in militant direct-action tactics without going through the proper organizational channels (see Roeser 1983). He finally founded his own organization in 1980, the Pro-Life Action League, in which he is unencumbered by bureaucratic decision-making procedures. As he told me in a 1981 interview:

I don't like boards of directors—you always have to check with them when you want to do something—and I was always getting in trouble with the board. So I resigned, or they fired me, however you want to put it, because they didn't like my tactics. . . . The Pro-Life Action League is my organization. I'm the chairman of the board and the other two board members are

If movement entrepreneurs interfere with the formalization of SMOs, as this case suggests, professional managers encourage formalization. While informal structures are associated with nonprofessional leadership, all of the organizations in my sample that have moved toward a more formal structure have done so under the leadership of professional managers (see Tables 3 and 4). Although further study of the leadership styles of professional managers compared to nonprofessional SMO leaders is necessary, my data suggest some reasons why professional managers tend to formalize the SMOs that they lead. Insofar as a bureaucratic or formalized structure is associated with organizational maintenance (Gamson 1975), professional leaders have a strong motivation to promote formalization: ongoing resources are needed to pay the salary of the professional manager. However, the motivation to promote financial stability is also shared by nonprofessional staff who are dependent on their income from the SMO position; moreover, it is possible to secure stable funding by means other than formalization. It is also important that professional managers are interested in using and developing organizing skills and expanding

my wife and my best friend. If I want to do something, I call up my wife and ask her if she thinks it's a good idea. Then I have two-thirds approval of the board! (Personal interview)

Additional examples of such conflict between the entrepreneurial and professional roles in the social movements literature can be cited. In the farm worker movement, there has been conflict over the leadership of Cesar Chavez, who attempted to maintain personal control over the United Farm Workers at a time when others wanted to create a more bureaucratic union structure (see Barr 1985; Jenkins 1985a, pp. 204–6). In the gay rights movement, the "brash" activist Randy Wicker left the New York Mattachine Society to found "the Homosexual League of New York, a one-man organization designed to give him a free hand to pursue his own plans" (D'Emilio 1983, pp. 158–59). In the environmental movement, Friends of the Earth founder David Brower was ousted from the organization after he failed in his attempts to maintain control over the SMO and prevent it from becoming formalized (Rauben 1986). And in Mothers Against Drunk Driving (MADD), there has been conflict over the role of MADD's entrepreneur, Candy Lightner, who has attempted to maintain personal control over a bureaucratizing organization (Reinarman 1985).

the SMOs they lead because this is what they do for a career. A formalized structure, with its developed division of labor, enables the professional manager to achieve a degree of organizational development not possible in informal SMOs.

The case of the Abortion Rights Association of Illinois (formerly Illinois Citizens for the Medical Control of Abortion and later NARAL of Illinois) reveals the role of professional leadership in the creation of organizational stability and bureaucracy. From 1970 to 1976, ICMCA/ARA was led by a nonprofessional director who was paid a small salary, but who volunteered much of her time and was often not paid on time due to financial problems of the organization. She was extremely effective, but did not create a structure such that others could easily carry on her work. Rather, organizational activities were carried out by force of her personality.⁸ Moreover, volunteer efforts were channeled into instrumental tactics like lobbying, and little emphasis was placed on organizational maintenance activities such as fundraising. When she resigned in early 1976, ARA entered a period of severe decline due to inept leadership and neglect of organizational maintenance.

A new director hired in 1978 was the first to develop a stable source of financial resources for the SMO. Although not a professional manager, the new director was highly motivated to secure funding because, unlike the previous directors, she was a graduate student who did not have a husband who made enough money to support her while she volunteered her time. She needed the money from the job and did not intend to work as a volunteer when there was not enough money to pay her salary (about

\$11,000 a year for part-time work) as had previous directors. Consequently, she set about trying to figure out how to bring a stable income to the organization. She eventually was able to do so by personally convincing the owners of a number of abortion clinics in the city to make monthly financial contributions to NARAL (personal interview with 1978–80 NARAL of Illinois director). Thus, it was important that the leader of Illinois NARAL was someone who, while not a career activist, did need to be paid and was therefore motivated to provide the organization with financial stability. However, the financial stability was based on the personal appeal of the organization's director; the contributions from clinics were received as a result of personal relationships with clinic owners established by the NARAL director. After she left NARAL and a new director replaced her in the fall of 1980, the organization lost these contributions and went through a period of budget tightening.

It was not until the first career professional took over leadership of NARAL of Illinois that the organization became more formalized and less dependent on the personal characteristics of its leaders. The director hired in 1980, who stayed with NARAL until 1983, was a young woman who had previously done community organizing work and who, unlike her predecessor, wanted a career in "organizing." She did not have any experience working on the abortion issue prior to being hired as the director of Illinois NARAL, but saw the job as a good experience for her, a way to develop her own skills and enhance her career objectives. Like other leaders, the professional manager was highly committed to the goals of the movement, both because of pro-choice views formed prior to directing NARAL and because of her experiences in working with NARAL. But the professional director's orientation to her job led her to make important changes in the structure of the organization.

Until Illinois NARAL's first professional manager took over, the board of directors was selected from the same pool of long-time activists, many of whom were highly involved in other organizations like Planned Parenthood and not very active in ARA/NARAL. Consequently, there was little division of labor in the organization and it was heavily reliant on the abilities of its executive director. When she was hired in 1980, the new director insisted that the board

⁸ By all accounts this leader had an extraordinary ability to recruit volunteers for various tasks. As one of my informants explained, "She was really effective at getting people to do things. She would keep after you so that it was easier to do what she wanted rather than have her continue to bug you." Another activist concurred, "There was nothing like having her call you at 7AM and tell you what you were going to do that day!" The problem of reliance on the personal characteristics of this director was later recognized by a board member who commented that the problem with the long-time director was that she kept knowledge about the organization "in HER head" (document in private papers), making it difficult for her successor to assume control.

selection procedures be revised so that active new volunteer recruits could serve on the board and so that the terms of service on the board were systematically rotated. This procedure was implemented in 1980, resulting in a board composed of active volunteers along with some old board members who continued to serve on a rotating basis to provide experience to NARAL. The result was that a formal procedure for bringing new and active members into the decision-making structure of the organization was established for the first time. This change was important in making the organization less exclusively dependent on its executive director for leadership. It also made volunteers more available to the executive director for use in organizational maintenance activities, such as the NARAL "house meeting" program,⁹ which provided an important source of funds to the SMO in the early 1980s. In Illinois NARAL and in other SMOs (see Table 4), formalization occurred as professional managers took over leadership. Once a formalized structure is in place, SMOs are better able to mobilize resources and continue to hire professional staff (see below).

THE CONSEQUENCES OF FORMALIZATION

The Maintenance of Social Movement Organizations

While informal movement organizations may be necessary to initiate movements, formalized SMOs do not necessarily defuse protest as Piven and Cloward (1977) argue; rather, they often perform important functions (e.g., lobbying) following victories won by informal SMOs (Jenkins and Eckert 1986, p. 827). And, while informal SMOs may be necessary to create the pressure for elite patronage, formalized SMOs are the usual beneficiaries of foundation funding and other elite contributions (Haines 1984; Jenkins 1985b; Jenkins and Eckert 1986). Consequently, formalized SMOs are able to maintain themselves—and the movement—over a longer period of time than are informal SMOs. This is particularly important in periods such as the one following

legalization of abortion, when movement issues are less pressing and mobilization of constituents is more difficult.

Jenkins (1985b, p. 10) argues that one of the reasons that formalized SMOs are able to sustain themselves is that foundations prefer dealing with organizations that have professional leaders and "the fiscal and management devices that foundations have often expected of their clients." In the case of the civil rights movement, foundations "selected the new organizations that became permanent features of the political landscape" through their funding choices (Jenkins 1985b, p. 15). It is important to recognize, however, that this selection process is a two-way street. Formalized SMOs do not just passively receive support from foundations and other elite constituents; they actively solicit these resources. They are able to do so because they have organizational structures and professional staff that facilitate the mobilization of elite resources. Most importantly, professional staff are likely to have the know-how necessary to secure funding (e.g., grant-writing skills and familiarity with procedures for securing tax-exempt status).

The ability of formalized SMOs to obtain foundation funding is part of a broader capacity for organizational maintenance superior to that of informal SMOs. Paid staff and leaders are critical to the maintenance of formalized SMOs because they can be relied on to be present to carry out tasks such as ongoing contact with the press and fundraising in a routine manner. A formalized structure ensures that there will be continuity in the performance of maintenance tasks and that the SMO will be prepared to take advantage of elite preferences and environmental opportunities (cf. Gamson 1975). Of course, volunteers might well have the skills to perform such tasks, and some informal SMOs do maintain themselves for a number of years, even in adverse environmental conditions (cf. Rupp and Taylor 1987). However, it is much more difficult to command the necessary time from volunteer activists on an ongoing basis. When informal SMOs do survive for many years, they are likely to remain small and exclusive, as was the case for the National Women's Party studied by Rupp and Taylor (1987) and Women Organized for Reproductive Choice in my sample (see Table 5).

The superior ability of formalized SMOs to maintain themselves is documented by the

⁹ The "house meeting" tactic, which involved holding meetings in the homes of NARAL members or other interested persons, was a recruitment tool developed as part of a national NARAL grassroots organizing program.

experiences of organizations in my sample (see Tables 5 and 6). On the national level, all of the surviving pro-choice organizations have at least moved in the direction of formalization (see Table 2). The one organization that did not do so, the Reproductive Rights National Network, was formed in a period of intense constituent interest in the abortion issue created by events such as passage of the Hyde Amendment cutoff of Medicaid funding of abortion in late 1976 and the election of anti-abortion president Ronald Reagan in 1980, but was unable to maintain itself after this period. On the local level, the movement industry declined in the period after legalization due to the lack of formalized SMOs (see Tables 2 and 5). The exception was Chicago NOW, which was moving toward formalization but which was concentrating its energies on the Equal Rights Amendment rather than on the abortion issue. In the period after the environmental stimulus of the Hyde Amendment, the local pro-choice SMOs that became stable were those that began to formalize. Among informal SMOs, only Women Organized for Reproductive Choice (WORC) has survived and it has remained a small organization. Thus, on both the national and local levels, formalized SMOs have been stable organizations that helped to sustain the movement during lulls in visible movement activity brought about by environmental developments.

Not only do formalized SMOs help keep a movement alive in periods when constituents become complacent, such as that following legalization of abortion, but they are prepared to take advantage of opportunities for mobilization when the environment changes. In the late 1970s, when the anti-abortion movement scored its first major victories, including the cutoff of Medicaid funding for abortions, adherents and constituents were alerted by visible threats to legal abortion, and the ability of the pro-choice movement to mobilize was greatly enhanced. However, it was important not only that the environment was conducive to mobilization but also that the pro-choice movement had formalized organizations that were stable and ready for combat (cf. Gamson 1975). In NARAL, professional leaders were available with the skills and know-how necessary to form a political action committee, launch a highly successful direct-mail drive, create an educational arm, obtain

foundation grants, and organize state affiliates.

In contrast to the success of NARAL and other formalized SMOs in mobilizing resources (see Table 6), informal movement organizations were not as prepared to take advantage of constituent concerns in the late 1970s. The Reproductive Rights National Network (known as R2N2), an informal SMO formed in the late 1970s, received a donation of money to undertake a direct-mail campaign during this period, but the attempt to raise money and recruit activists in this manner was unsuccessful because activists in the organization's national office did not have the experience to carry out the program properly (personal interviews with 1980-83 R2N2 coordinator and steering committee member). There might have been local activists in the organization with direct-mail skills who could have directed this campaign, but in this instance, and in others, the informal structure of the organization made access to such skills difficult to obtain. As one steering committee member commented in an interview, R2N2 suffered from "the classic leadership problem"—the difficulty of trying to get people "to do what they are supposed to do" and the problem of "no one being around" to coordinate work—that has long affected the "younger branch" of the women's movement (see Freeman 1975) of which R2N2 was a descendent. Ultimately, this structural problem led to the demise of R2N2 after the period of heightened constituent interest in abortion ended.¹⁰

Formalized SMOs, then, are able to maintain themselves during periods when it is difficult to mobilize support and are consequently ready to expand when the environ-

¹⁰ The delay experienced by Women Organized for Reproductive Choice in obtaining the 501(c)3 tax status that allows a nonprofit organization to obtain tax-deductible contributions also reveals the difficulties that informal SMOs have with organizational maintenance. Although there were several local Chicago foundations willing to fund organizations such as WORC, the SMO was unable to take advantage of these opportunities for some time because it had not obtained the necessary tax status. When I asked WORC's sole part-time, nonprofessional staff leader why the tax status had not been obtained, she replied that the delay occurred because she was the only one who knew how to apply for the status, but that she simply had not had the time to do it yet.

ment becomes more conducive. An important reason for this is that they have paid leaders who create stability because they can be relied on to perform ongoing tasks necessary to organizational maintenance. However, stability is not simply a matter of having paid activists; it is also important that formalized SMOs have structures that ensure that tasks are performed despite a turnover in personnel. It is the combination of formalized structure and professional leadership that facilitates organizational maintenance in SMOs.

Strategies and Tactics

While Piven and Cloward (1977) appear to be mistaken in their claim that formalized SMOs necessarily hasten the end of mass movements, their argument that formalization leads to a decline in militant direct-action tactics remains important. Formalization does affect the strategic and tactical choices of SMOs. First, formalized SMOs tend to engage in institutionalized tactics and typically do not initiate disruptive direct-action tactics. Second, formalized SMOs are more likely than informal SMOs to engage in activities that help to achieve organizational maintenance and expansion as well as influence on external targets.

Formalization and institutionalized tactics. The association between formalization and institutionalization of strategies and tactics occurs for two reasons: (1) As environmental developments push a movement into institutionalized arenas, SMOs often begin to formalize so they can engage in tactics such as legislative lobbying (cf. Cable 1984). Formalization allows SMOs to maintain the routines necessary for such tactics (e.g., ongoing contacts with legislators) through paid staff and an established division of labor. (2) Once SMOs are formalized, institutionalized tactics are preferred because they are more compatible with a formalized structure and with the schedules of professional activists. For example, institutionalized activities can be approved in advance; the amount and type of resources expended for such efforts can be controlled; and activities can be planned for the normal hours of the professional's working day.

The history of the pro-choice movement clearly reveals that formalization accelerated as environmental events forced the movement into institutionalized arenas. Prior to 1973,

the movement to legalize abortion was an outsider to established politics. Although institutionalized tactics were employed in this period, no SMO confined its activities to institutionalized arenas; demonstrations and quasi-legal or illegal abortion-referral activities were common tactics (see Table 5).¹¹ After legalization in 1973, the arena for the abortion conflict switched to Congress and SMOs like NARAL began to formalize in order to act in that arena. After the Hyde amendment was passed in 1976, the political arena became the primary battlefield for the abortion conflict, and formalization of SMOs within the movement accelerated. Although informal SMOs in my sample did engage in some institutionalized tactics, the organizations that sustained a heavy use of tactics such as legislative lobbying and political campaign work were most commonly formalized SMOs (see Tables 5 and 6). It is possible for informal SMOs to engage in such tactics, but only as long as the leaders of the organization have the necessary know-how and other organizational resources. Formalized organizations are able to maintain such activities, despite changes in leadership, due to their structural division of labor.

Environmental forces and events, including countermovement activities, do place strong constraints on the tactics of SMOs. When environmental events call for nonroutine direct-action tactics, informal movement organizations typically play a critical role in initiating these tactics (Jenkins and Eckert 1986). In the case of the civil rights movement, for example, Morris (1984) shows that the formalized NAACP preferred to focus on legal and educational tactics, while informal SMOs were engaging in direct-action tactics. However, even the NAACP engaged in some direct-action tactics through its youth divisions at a time when it was clear that progress could only be made through tactics such as the sit-ins initiated by informal SMOs.

When formalized SMOs do engage in direct-action tactics, however, they are likely to be nondisruptive, planned versions of the

¹¹ Abortion-referral activities were regarded by many activists as a militant means of challenging the system (see Lader 1973). In the case of women's movement projects such as the CWLU Abortion Counseling Service, there was an attempt to create an alternative type of organization as well as to serve the needs of women.

tactics. NARAL's use of the "speak-out" tactic in the period following 1983 provides some evidence on this point. This was a period when the pro-choice movement was beginning to take the offensive in the legislative and political arenas, particularly after anti-abortion forces failed in their attempt to pass a Human Life Bill through Congress in 1982 and the Supreme Court delivered a ruling in 1983 that struck down most of the restrictions on abortion that had been passed by state and local legislatures. The anti-abortion movement responded to these developments by forcing a switch away from the institutionalized arenas, in which pro-choice forces were beginning to gain the upper hand, to public relations tactics such as the film *The Silent Scream*.¹² As a result of media coverage that began to focus on the issue of fetal rights (cf. Kalter 1985), pro-choice organizations such as NARAL were forced to respond. NARAL chose to employ a version of the speak-out tactic originated by women's liberation groups in the late 1960s. Originally, the speak-out was a spontaneous type of public forum at which women spoke out about their experiences as women, relating their own stories about illegal abortions and so forth. NARAL's version of this tactic was a planned one; to focus media and public attention on women rather than on the fetus, NARAL asked women around the country to write letters about their experiences with abortion addressed to President Reagan and other elected officials and send the letters to NARAL and its affiliates. The letters were then read at public forums on a scheduled day. This case suggests that formalized organizations can switch from tactics in institutionalized arenas to other tactics when necessary, but the tactics they choose are likely to be orderly versions of direct-action tactics originated by informal SMOs.

Formalization and organizational maintenance tactics. Not only are the tactics of formalized SMOs typically institutionalized, but they are also frequently geared toward organizational maintenance and expansion, in

addition to more instrumental goals. This was certainly the case for NARAL and its affiliates, which embarked on a "grassroots organizing" strategy known as "Impact '80," intended to expand NARAL, and its political influence, in the late 1970s (see, for example, *NARAL News*, November 1978). It was also the case for NOW, which engaged in a number of high-profile tactics around abortion that were used in membership appeals in the 1980s (see, for example, *National NOW Times*, September/October 1979). In Chicago NOW, there was explicit discussion of the membership-expanding potential of the abortion issue in the late 1970s and early 1980s (personal interview with Chicago NOW executive director).

The experiences of organizations in my sample suggest that professional leaders play an important role in influencing organizations to adopt tactics that aid organizational maintenance. In several organizations, professional staff were responsible for undertaking direct-mail campaigns that helped to expand the organization. In NARAL, an experienced director who took over in 1974 began a direct-mail campaign that was later expanded by other professional leaders (personal interviews with 1974-75 and 1975-81 NARAL executive directors). In the NWHN, an executive director succeeded in expanding organizational membership in the late 1970s through direct mail despite the concerns of nonprofessional leaders that direct mail would bring uncommitted members into the organization (personal interviews with NWHN board members). In ZPG, a professional manager was responsible for reversing the decline in individual membership in the organization through direct mail after he finally convinced the nonprofessional leaders on the ZPG board to undertake the campaign (personal interview with 1976-80 ZPG executive director).

The case of Illinois NARAL is particularly valuable in revealing the role of professional leaders in advancing strategies that aid organizational expansion. In the early 1980s, the NARAL affiliate made important changes in its strategies and tactics, switching from an emphasis on legislative lobbying to heavy involvement in political campaign work. This switch was part of the national NARAL Impact '80 program, which began to be implemented by Illinois NARAL in 1979. However, it was not until the early 1980s,

¹² *The Silent Scream* attempted to use sonography to make its case that the fetus suffers pain in an abortion. The film was distributed to members of Congress and received a great deal of media attention, helping to shift the debate on abortion to "scientific" issues.

after a professional manager took over, that Illinois NARAL really became committed to the new tactics, which included political campaign work and workshops to train volunteers, house meetings to recruit new members, and an "I'm Pro-Choice and I Vote" postcard campaign.

One reason why the switch in mobilization tactics occurred after 1980 was that the national NARAL organization had by this time become much better organized in implementing the grassroots organizing program through training and grants to local affiliates (see Table 4). As the national organization became more formalized, it was able to extend more aid through its bureaucratic structure to affiliates and to exert more influence over their tactics. In fact, NARAL affiliates signed formal contracts in exchange for national funds to carry out programs in the early 1980s. The other reason was that there were important differences in the state of the organization and in the orientations of the Illinois NARAL directors who served from 1978–1980 and from 1980–1983, which resulted in different strategies and tactics.

Because ARA was in a state of decline when she was hired in 1978 (see Table 5), the new director spent much of her time in administrative tasks; securing funding, renewing contacts with members, and organizing the office. Due to her organizational skills and attractive personal style, she was highly successful at reviving the organization. In doing so, she used the skills of constituents but did not create a formalized organization. NARAL's strategies and tactics were determined solely by the pragmatic and instrumental approach of the 1978–80 executive director. Rather than concentrating on bringing large numbers of activists into the organization, she recruited volunteers with particular skills, including her friends, for specific tasks. Tactics were aimed less at gaining exposure for NARAL than at accomplishing specific objectives. For example, when a Chicago alderman moved to introduce an ordinance in the city council restricting the availability of abortions, the NARAL director worked to have the measure killed through quiet, behind-the-scenes maneuvers. In this instance and in lobbying work in the state legislature, she made use of the skills and influence of seasoned activists.

Due to her success with such tactics and her lack of concern with organizational

expansion, the 1978–80 director was not sold on the national NARAL "Impact '80" program, which was intended to expand NARAL and make the organization a visible political force. In accordance with the national organization's wishes, she tried to implement the program, conducting a limited number of house meetings. But she remained unconvinced of their effectiveness, preferring more efficient methods of fundraising and recruitment. She had similar objections to other parts of the national NARAL grassroots organizing program. When I asked her about the political skills workshops, she replied:

I refused to do those political skills workshops. I didn't have time, I said [to national NARAL], I'm doing the house meetings program—that's enough. I really just didn't think they were necessary—there are enough organizations like the League of Women Voters which do political skills training. From an organizational point of view, I guess it's good to do your own skills training to show that the organization is really involved. (Personal interview)

Although she recognized the organizational value of such tactics, this director was not primarily concerned with organizational expansion, but with more specific goals, such as defeating particular pieces of anti-abortion legislation. She was accustomed to using individual skills for this work rather than mobilizing large numbers of activists. When asked about campaign work, she replied:

I do think the "I'm Pro-Choice and I Vote" [postcard campaign] was important in getting the message across to legislators and candidates in a public way. I put a lot of emphasis on [abortion] clinics for post cards because there was a ready-made setting for getting people to sign them. . . . As far as the campaign work, it was clear to me at the time that Reagan was going to be elected. It was too late in 1980 to make a difference. And, on the local level, there are already liberal groups . . . that almost always support pro-choice candidates anyway. . . . I'm just not that much on duplicating efforts which I think NARAL is doing with the campaign work. (Personal interview)

As these comments indicate, the 1978–80 Illinois NARAL director preferred instrumental tactics rather than organizing tactics as a result of her background and experiences. She saw the house meetings as an inefficient way to raise money, and, while she recognized that political-skills workshops and campaign work were good for organizational visibility,

she was not convinced of their effectiveness for achieving movement goals—her primary concern. She used the “I’m Pro-Choice and I Vote” postcards as a signal to legislators rather than as an organizing tool. Due to her influence, most of Illinois NARAL’s activities during her tenure were instrumentally targeted at state legislators.

It was not until an executive director with experience in community organizing work and with ambitions for a movement career was hired in 1980 that the Illinois NARAL affiliate enthusiastically implemented the national NARAL grassroots organizing program. In contrast to her predecessor, who had no interest in organizing *per se*, the new director was anxious to engage in “organizing” work to expand the local affiliate and eagerly began to develop the house meeting program that was part of the national NARAL organizing strategy. One of the reasons that she was successful in doing so was that, as described above, she created a more formalized organization. Whereas her predecessor had been reluctant to delegate certain tasks, including speaking at house meetings, the new director made heavy use of a division of labor that had not existed in the previously informal SMO. Aided by her past experience with community organizing, she was highly successful at training volunteers to conduct house meetings and, with funds raised from the meetings and some financial aid from national NARAL, was able to hire an organizer to run the house meeting program, thereby increasing the division of labor in the SMO.

The new director’s strategic approach was clearly influenced by her professional interest in organizing tactics. She used the NARAL house meeting program to raise money, but also as a means of bringing new activists into the NARAL organization. And just as the house meetings were used as an organizing tool, so were the NARAL postcards. As the NARAL director explained:

The best thing about the postcards was that they gave us new contacts. We would set up tables in different places and people would come up and sign and say things like “I’m really glad someone is doing something about this issue.” And then we’d say, “Would you like to get more involved?” and we got a number of activists that way. We also got names for a mailing list. . . . So the postcards were good as a way of making contacts, a means of exposure for the organization. The actual effect of the postcards on legislators was, I think, minimal. I

know some of the legislators never even opened the envelope; when we delivered an envelope-full to Springfield, they’d just throw them away. (Personal interview)

Thus, Illinois NARAL employed tactics oriented toward organizational goals after moving toward formalization. This local case history suggests that professional leaders may be more likely than nonprofessional staff and volunteers to influence SMOs to engage in tactics that have organizational maintenance functions rather than strictly instrumental goals because they have organizational skills that they want to use and develop.

Coalition Work

The formalization of social movement organizations also has implications for coalition work within movements. In my sample, formalized SMOs have played the dominant roles in lasting coalitions (see Tables 5 and 6). Coalitions among formalized SMOs are easier to maintain than are coalitions among informal SMOs or between formalized and informal SMOs because formalized SMOs typically have staff persons who are available to act as organizational representatives to the coalition and routinely coordinate the coalition work. Just as paid staff can be relied on to carry out maintenance tasks for SMOs, they can also be relied on to maintain contact with the representatives of other SMOs in a coalition. When all of the SMO representatives are paid staff, coordination is easiest. While volunteers can represent SMOs in coalitions, it is more difficult to keep volunteers in contact with one another and to coordinate their work, particularly in the absence of a formalized coalition organization with paid staff of its own. Thus, paid staff help to maintain coalitions, thereby lessening the organizational problems of coalition work (see Staggenborg 1986, p. 387).

The experiences of the Illinois Pro-Choice Alliance (IPCA), a Chicago-based coalition organization, reveal the impact of organizational structure on coalition work. Formalized movement organizations, including NARAL of Illinois and Chicago NOW, have played a major role in this coalition, while informal organizations, such as Women Organized for Reproductive Choice (WORC), have had a difficult time participating in the coalition. One past director of the Illinois Pro-Choice

Alliance recognized this problem, commenting in an interview:

. . . there is a real difference between groups which have paid staff and the grassroots groups which are all volunteers. The groups with paid staff have a lot more opportunity to participate [in the coalition]—even trivial things like meeting times create problems. The groups with paid staff can meet in the Loop at lunch time—it makes it easier. Also . . . people from the grassroots groups tend to be intimidated by the paid staff, because as volunteers the grassroots people are less informed about the issue. Whereas for the staff, it's their job to be informed, and they have the resources behind them. . . . I think too that the grassroots people have higher expectations about what can be done. They're volunteers who may have worked all day, then they do this in the evenings; they're cause-oriented and they expect more out of people and projects. Paid staff are the opposite in that they work on the issue during the day and then want to go home to their families or whatever at night and leave it behind. They want to do projects with defined goals and time limits, projections as to the feasibility and all that. Not that paid staff are not committed people. I think it's good to have a balance between the grassroots and staffed groups. Without the grassroots people, I think things would be overstructured; with just the grassroots people, well, there's too much burnout among them. The staffers tend to last a lot longer. (Personal interview)

These perceptions are borne out by the difficulties of Women Organized for Reproductive Choice in trying to participate in the IPCA. WORC members interviewed also spoke of the problems they had attending IPCA meetings at lunchtime in downtown Chicago, a time and place convenient for the staff of formalized SMO members of the coalition but difficult for WORC members, who tended to be women with full-time jobs in various parts of the city. Another reason for the difficulty is that the coalition has focused on institutionalized lobbying activities, tactics for which WORC members have neither the skills nor the ideological inclination. Efforts by WORC to get the coalition to engage in a broader range of tactics, including direct-action tactics, have been unsuccessful. On the national level, the Reproductive Rights National Network had nearly identical problems participating in the Abortion Information Exchange coalition (see Staggenborg 1986). Formalized SMOs play an important role in maintaining coalitions, but they also influence coalitions toward narrower, institu-

tionalized strategies and tactics and make the participation of informal SMOs difficult.

CONCLUSION

While professionalization of leadership and formalization of SMOs are not inevitable outcomes of social movements, they are important trends in many movements (cf. McCarthy and Zald 1973, 1977; Gamson 1975, p. 91). There is little evidence, however, that professional leaders and formalized SMOs will replace informal SMOs and nonprofessionals as the initiators of social movements and collective action. While systematic research on the influence of different types of movement leaders is needed, my data show that the roles of entrepreneur and professional manager are in some cases distinct. This is because environmental opportunities and preexisting organizational bases are critical determinants of movement mobilization; movement entrepreneurs do not manufacture grievances at will, but are influenced by the same environmental and organizational forces that mobilize other constituents. Contrary to the arguments of McCarthy and Zald (1973, 1977), nonprofessional leaders and informal SMOs remain important in initiating movements and tactics that are critical to the growth of insurgency (cf. McAdam 1983).

Professionalization of leadership has important implications for the maintenance and direction of social movement organizations. My data suggest that professional managers, as career activists, tend to formalize the organizations they lead in order to provide financial stability and the kind of division of labor that allows them to use and develop their organizational skills. Once formalized, SMOs continue to hire professional managers because they have the necessary resources. Contrary to the arguments of Piven and Cloward (1977), formalized SMOs do not diffuse protest but play an important role in maintaining themselves and the movement, particularly in unfavorable environmental conditions when it is difficult to mobilize constituents. Formalized SMOs are better able to maintain themselves than are informal ones, not only because they have paid staff who can be relied on to carry out organizational tasks, but also because a formalized structure ensures continuity despite changes in leadership and environmental conditions.

Thus, a movement entrepreneur who prevents formalization by maintaining personal control over an SMO may ultimately cause the organization's demise. A movement that consists solely of informal SMOs is likely to have a shorter lifetime than a movement that includes formalized SMOs. Similarly, a coalition of informal SMOs has less chance of survival than a coalition of formalized SMOs.

While formalization helps to maintain social movements, it is also associated with the institutionalization of collective action. Formalized SMOs engage in fewer disruptive tactics of the sort that pressure government authorities and other elites to make concessions or provide support than do informal SMOs. Formalized SMOs also tend to select strategies and tactics that enhance organizational maintenance. Given the prominent role of professional managers in formalized SMOs, these findings raise the Michels ([1915] 1962) question of whether formalized organizations with professional leaders inevitably become oligarchical and conservative, as Piven and Cloward (1977) argue. Based on my data, I dispute the conclusion that formalized SMOs necessarily become oligarchical. In fact, many seem more democratic than informal SMOs because they follow routinized procedures that make it more difficult for individual leaders to attain disproportionate power. As Freeman (1973) argues, "structureless" SMOs are most subject to domination by individuals.

The tendency of formalized SMOs to engage in more institutionalized strategies and tactics than informal SMOs might be interpreted as a conservative development, given findings that militant direct-action tactics force elite concessions (cf. Jenkins and Eckert 1986). Informal SMOs, with their more flexible structures, are more likely to innovate direct-action tactics. However, the institutionalization of movement tactics by formalized SMOs does not necessarily mean that movement goals become less radical; an alternative interpretation is that movement demands and representatives become incorporated into mainstream politics. For example, the National Organization for Women is now an important representative of women's interests in the political arena. While the long-term implications of this phenomenon for the social movement sector and the political system require further investigation, it is certainly possible for formalized SMOs to exert a progressive influence on the political system.

Finally, my research raises the question of

whether movements inevitably become formalized or institutionalized, as suggested by classical theories of social movements, which argue that movements progress through stages toward institutionalization (see Lang and Lang 1961; Turner and Killian 1957 for discussions of such stage theories). In the case of the pro-choice movement, there has clearly been a trend toward formalization. As Gamson (1975, p. 91) notes, there does seem to be a kernel of truth to theories that posit an inevitable trend toward bureaucratization or formalization. However, as Gamson also notes, "the reality is considerably more complex" in that some SMOs begin with bureaucratic or formalized structures and others never develop formalized structures. Although neither Gamson nor I found cases of SMOs that developed informal structures after formalization,¹³ such a change is conceivable under certain circumstances (e.g., if nonprofessional staff are hired to replace professional managers, a development most likely at the local level). Classical theories of the "natural history" of a movement focus on the institutionalization of a movement as a whole and ignore variations in the experiences of different SMOs within the movement. My research shows that SMOs vary in the ways in which they deal with internal organizational problems and changes in the environment. Formalization is one important means of solving organizational problems, particularly as SMOs grow larger; however, SMOs can also develop alternative structures. Important variations exist within the two broad categories of SMO structure that I have identified; further empirical research on leadership roles and SMO structures and their impact on organizational goals and activities is necessary.

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¹³ Although it never developed a structure that could be called formalized, one SMO in my sample, Women Organized for Reproductive Choice, did become even more informal as it became smaller.

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DEPENDENCE, DISTORTED DEVELOPMENT, AND FERTILITY TRENDS IN NONCORE NATIONS: A STRUCTURAL ANALYSIS OF CROSS-NATIONAL DATA*

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The results of quantitative, cross-national studies of the effect of dependency/world-system position on fertility trends in noncore nations are contradictory. Some provide support for the view that dependency distorts development and, in turn, impedes fertility decline. Others either qualify or refute this finding. This study criticizes the methods, measures, and approaches used in previous research. It then conducts a new analysis based on those criticisms. Results suggest that dependency does distort development and impede fertility decline.

Recently, substantial literature has appeared that uses cross-national data to develop tests of several controversial issues regarding the effects of dependency and/or world-system position on aspects of Third World development.¹ While most of this literature focuses on the economic or political dimensions of development, several of the more recent efforts have begun to study the relationship between dependency/world-system position and demographic dimensions of development (see Kentor 1981, Timberlake and Kentor 1983, London 1987, and Bradshaw 1987 on urbanization; Hout 1980, Nolan and White 1983 and 1984, Cutright and Adams 1984, Ward 1984, and Nolan 1988 on fertility; and Nolan and White 1983, London and Williams 1988, and Wimberley 1987 on mortality).

Like the research on economic and political development, studies of dependency and demography have generated controversy. For example, the findings regarding depen-

dency/world-system position and fertility are clearly contradictory. Papers by Hout (1980) and Nolan and White (1983) support the view that dependency (or subordinate status in the world-system) distorts development, acting to either maintain high levels of fertility or impede declines in fertility. Research by Ward (1984), Nolan and White (1984), and Nolan (1988), however, comes to a more equivocal conclusion: support for the "dependency-distorted development hypothesis" is weak and indirect. Finally, a study by Cutright and Adams (1984) yields no support for the hypothesis. This controversy in the study of dependency and fertility is the focus of this paper.

Proponents of dependency theory expect high levels of dependence to impede fertility decline for several reasons. By hindering economic growth and fostering processes such as income inequality and the growth of a "bloated tertiary" or service sector (cf. Bornschier and Chase-Dunn 1985; Evans and Timberlake 1980), investment dependency and trade dependency influence the status of women (Ward 1984) and children (Hout 1980) in ways that retard fertility decreases. For example, Ward (1984) argues that dependence restricts women's economic opportunities in a number of ways, including the concentration of women in informal or low-wage labor markets. Such economic roles remain compatible with childbearing, award women status for their childbearing roles, and, thus, encourage high fertility. Also, by "distorting" development, dependence fosters a situation in which children make an integral contribution to the household economy. When wealth flows intergenerationally from

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¹ See especially the studies by Chase-Dunn (1975), Robinson (1976), Bornschier, Chase-Dunn, and Robinson (1978), and Snyder and Kick (1979). See also the critiques by Jackman (1980) and Weede (1980). Bornschier and Chase-Dunn (1985) present a comprehensive literature review.

child to adult, child labor is "profitable." Hence, there is little motivation to limit fertility (Hout 1980; Caldwell 1980). Furthermore, Nolan and White (1984, p. 84) suggest that "if it benefits the core, fertility will remain high in periphery nations. For example, the core may benefit from a continuing supply of cheap labor and, accordingly, core-periphery interactions may counteract developmental forces conducive to fertility decline."

Despite the plausibility of these predictions, especially given the considerable support for other dependency propositions, empirical support for the expectation that dependency impedes fertility decline has not been compelling. Some insight into the sources of contradictory research results in this area may be gained from a closer examination of the studies cited above. Hout (1980) analyzed crude birth-rate data for four time periods: 1915-19, 1945-49, 1965, and 1975 for the 18 nations making up Hispanic America. He measured dependency in terms of trade-partner concentration and commodity concentration for four time periods appropriately lagged behind fertility (i.e., 1900, 1930, 1950, and 1960). He "controlled" for an index of internal development, the square of development, and two development-dependence interaction terms. Hout pooled time series and cross-sections to yield 62 cases, losing 10 cases due to missing data. His regression analysis provided "empirical support for the argument that *the fertility-reducing effect of socioeconomic development is strongest when dependence is low; it weakens as dependence increases*" (Hout 1980, p. 175; emphasis in original). This finding held for analyses that incorporated both measures of dependence separately, in an additional lagged dependent variable model, and in an analysis of percentage change in the crude birth rate as dependent variable.

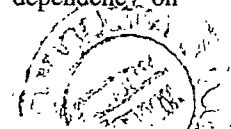
Nolan and White (1983) analyzed crude birth-rate data for 1970 and 1977 and total fertility-rate data for 1977 for 92 less-developed countries (LDCs). These dependent variables were regressed on logged values of energy consumption, including sequentially introduced higher-order terms, to control for development effects. Dummy variables developed from Snyder and Kick's (1979) measure of world-system position were then entered into the best-fitting equa-

tions for each dependent variable to assess the effect of system status net of development. Next, a control for child-mortality rates was included. These tests strongly confirmed that "non-core status in the world system was associated with fertility levels higher than development levels alone would predict" (Nolan and White 1983, p. 3).

In 1984, Nolan and White provided a much more stringent analysis of the status-fertility relationship by controlling for the effects of several additional, theoretically relevant, structural determinants of fertility trends using data for 100 nations over the period 1960-1977. Developing hypotheses from demographic-transition theory and wealth-flows theory (Caldwell 1980), they controlled for both "levels" (*circa* 1960) and "changes" (1960-1977) in energy consumption per capita, child-mortality, and female labor-force representation. They then examined associations between fertility change and lagged changes in its proposed determinants, including lagged dependent variables. The results were compared for core, semiperiphery, and periphery nations to ascertain whether the sources of fertility change vary by world-system status. They concluded that, although all three theories received some support, the findings did not strongly support world-system theory because little evidence of peripheral-semiperipheral differences emerged.

Ward (1984) analyzed 1965-75 data on the effect of dependence on fertility data for as many as 115 nations, including those in the core. In her most complex equations, 1975 total fertility rate was regressed on *circa* 1965 measures of dependence and "controls" for combinations of the following variables: women's economic status, women's education, state strength, economic development, income inequality, infant mortality, and family planning. Several initially observed direct effects of dependence on fertility were reduced by intervening factors. She concluded (p. 129) that "investment and dependency have only small indirect effects on fertility behavior through the intervening mechanisms of infant mortality, income inequality, and the economic status of women." (See Nolan [1988] for a similar conclusion that the effects of world-system position are indirect.)

Cutright and Adams (1984) used 1960-1980 data for 20 Asian and 20 Latin-American nations to test the effects of dependency on



1980 crude birth rate and 1960–80 crude birth rate change. Fifteen different indicators of dependence were computed and correlated with the fertility measures by region. *None* of the dependency measures had a positive (or negative) and significant association in both regions for both fertility measures. Furthermore, in a regression analysis (by region), none of several dependency measures were related to 1980 crude birth rate or crude birth rate change, net of controls for social development and family-planning program effort. They concluded (p. 124) that measures of dependency probably would not yield consistent net direct effects on fertility “once social development and family planning program effort are considered.”

These studies are based on widely divergent methods, measures, and analysis strategies. Some focus on only one or two regions, others include only samples of LDCs, and others include core nations. Some conduct cross-sectional regression analyses, others focus on lagged cross-sections, and, on occasion, others use a panel-regression model. They do not carefully select a theoretically justified measure of dependency. Rather, their exploratory approach uses several readily available measures to “see what happens.” Finally, several studies do not include enough control variables based on theory and precedent.

DATA AND METHODS

The Population

In each of these areas of disagreement, there is an optimal approach. For example, the *general* hypothesis that dependence on core nations distorts demographic development in noncore nations should be tested for the largest population of noncore nations available.² Core nations should not be included in the population (see Mason 1987), nor should the population be restricted to one or two specifically chosen regions. The

population for this study is defined as all noncore nations (i.e., those classified as semiperipheral or peripheral in Bollen's [1983] revision of Snyder and Kick's [1979] measure of world-system position.³ In the initial set of equations that include all controls, complete data are available for 59 nations (nations with any missing information are excluded). In a second set of equations, nonsignificant variables are dropped from the analysis. This increases the number of available cases to 62 (see the Appendix), enough if the number of independent variables is kept within reason. If parameter estimates remain fairly stable despite a shifting case base, confidence in the results is enhanced.

Regression Procedures

Second, I used panel-regression analysis to evaluate the main hypothesis so I could compare this study with others using this technique. In a panel analysis, the dependent variable at a recent point in time is regressed on itself and the independent variables at an earlier point in time. This estimates the effects of the independent variables on *change* in the dependent variable and reduces the likelihood of reciprocal causality that is common to cross-sectional analysis. Also, given the usually high correlation between the dependent variables at the two points in time, panel analyses assign maximum explanatory power to the lagged dependent variable. This yields a very conservative test of the effect of the independent variables on change in the dependent variable (cf. Heise 1970; Hannan 1979). It also estimates this effect while avoiding the problems associated with other measures of change, such as simple differences (cf. Duncan, Cuzzort, and Duncan 1961; Bohmstedt 1969).

However, some problems are associated

² Given problems relating to sampling bias and the requirements and limitations of regression analysis, it is important initially to maximize the number of cases available for analysis. For example, a common rule of thumb suggests that regression analyses should be limited to a maximum of one independent variable for every 10 cases. This rule is often violated.

³ Bollen's (1983, pp. 473–76) revision was based on an analysis of partial regression plots of residuals. He discovered six outliers, argued that they represented a misclassification of countries by Snyder and Kick's (1979) procedures, and supported this argument with historical data. As a result, Spain, Portugal, and South Africa were reclassified from the core to the semiperiphery, and Taiwan, Iraq, and Saudi Arabia were reclassified from the semiperiphery to the periphery. This measure is based on *circa* 1965 data.

with panel analysis, e.g., the possibility of serial correlation of errors. However, this results in a more conservative test of the main hypotheses because the effect of the lagged dependent variable would be inflated relative to the estimated effects of the independent variables (cf. Timberlake and Kentor 1983, p. 499; Kessler and Greenberg 1981, pp. 87–89). Heteroskedasticity is also a potential problem, especially if the distributions of dependent and lagged dependent variables are skewed. This problem can be reduced by logarithmic transformation of the dependent and lagged dependent variables (see below) (Jackman 1980; Kmenta 1971, p. 249).

Panel analysis is used in portions of the dependency-fertility studies of Hout (1980), Nolan and White (1984), and Cutright and Adams (1984). Ward (1984, pp. 68, 135) argued that panel analysis was inappropriate because the dependent and lagged dependent variables were too highly correlated (.96 between the total fertility rate in 1968 and 1975). This correlation probably reflects the relatively short lag time and/or the inclusion of core nations in the sample. In the present study, the correlation between crude birth rate in 1984 and 1965 for 62 noncore nations is .83.

Independent Variables: Dependency

Third, London (1987, p. 34) has recently argued that a measure of dependency “explicitly designed to assess a nation’s level of transnational corporate penetration may well tap the single most appropriate current dimension of the complex process of dependency, given the changing nature of international economic exchanges or core-periphery relations during the last two or three decades.” This argument is based on the distinction between “classical dependency” (characterized primarily by peripheral production of raw materials for core consumption) and “the new dependency” (characterized by dependent industrialization or transnational investment in industrial production in the periphery) (see especially, dos Santos 1970; Cardoso 1973; Cardoso and Faletto 1979; Evans 1979). Bornschier and Chase-Dunn (1985, pp. 51–52) present evidence that, since the mid-1960s, “the transnational corporations and international financial agencies have been displacing traditional trade dependence as the main form of core-periphery domination.”

Most of the cited studies of dependency and fertility used measures of trade dependence/classical dependence. This could help account for Hout’s (1980) support for the dependence hypothesis in Hispanic America from 1900 to 1975, while Cutright and Adams’ (1984) analysis of 1960–80 data found no support for the region. These considerations suggest that an appropriate current test would use a measure of transnational corporate penetration to indicate level of dependence. Therefore, this study will use the measure of “multinational corporate penetration” developed and made available by Bornschier and Chase-Dunn (1985, pp. 59–61).

The measure is computed by taking the square root of the product of (a) the stock of capital controlled by foreign direct investment as a proportion of the total capital stock of the country and (b) the stock of capital controlled by foreign direct investment divided by the total population of the country. It estimates the shares of both a nation’s capital and its labor that are controlled by core-based transnational corporations.

To test if a measure of “the new dependency” is more appropriate than measures of classical dependency, equations will be examined that substitute measures of foreign-trade structure in 1965 and commodity concentration in 1965 for the measure of multinational penetration. Foreign-trade structure is a measure of the composition of a nation’s total foreign trade according to the degree of processing of the traded goods (Bornschier and Heintz 1979, pp. 109–112). As in classical dependency theory, this measure distinguishes nations that export raw materials from those that import processed goods. Commodity concentration measures the value of a nation’s most important export commodity as a percentage of its total exports (Bornschier and Heintz 1979, pp. 97–98). The theory expects high levels of such concentration to inhibit nations’ abilities to compete in world markets.

Independent Variables: Controls

Finally, confidence in an analysis of the relationship between dependence and fertility is maximized when controls are introduced for the effects of other potential determinants of fertility trends. This study will attempt to control for all of the following factors:

economic development, family-planning effort, child death rate, female labor-force participation, primary-school enrollment level, and social-insurance program history.^{4,5} Several additional details on model specification are important. First, a crucial issue in the fertility literature is the controversy over the relative predictive power of economic development and family-planning effort (see Cutright and Kelly 1981 for a succinct summary). Consequently, special attention will be devoted to their operationalization.

⁴ Ward (1984) included controls for all of these phenomena, and more. One theoretically important control used by Ward, but not included in the present analysis, is the gini index of income inequality. In my judgment, this measure is too problem-laden to use. For critiques, see Muller (1985), Prechel (1985), and Menard (1986). If better data become available, the use of this variable in future research would be strongly recommended. Note also that precedent for these controls is found in the following literature: Mauldin and Berelson 1978, Tsui and Bogue 1978, Cutright and Kelly 1981, Menard 1983 and 1985, Entwisle 1981, Bollen and Entwisle 1984, Cutright 1965, Hohm 1975, Kelly, Cutright, and Hittle 1976, Hernandez 1981, Caldwell 1980, Kasarda 1971, and Nugent 1985.

⁵ The measures of economic development and family planning will be discussed in detail below. The other controls are measured as follows:

Child Death Rate, 1965 is the number of deaths of children aged 1-4 per thousand children in the same age group in 1965. (Source: *World Development Report 1986*, pp. 232-33) *School Enrollment, 1965* refers to estimates of the total enrollment of students of all ages in primary school, expressed as percentages of the total population of primary school age to give gross primary-school enrollment ratios. (Source: *World Development Report 1986*, pp. 236-37) *Female Labor Force, 1965* is an estimate based on averaging the percent of females in each nation's labor force in 1960 and 1970. (Source: United Nations, *Labor Force Estimates 1977*) An anonymous reviewer suggested that a later measure of FLF be used because "there are theoretical reasons why the effects of women's labor-force participation on fertility should have a shorter lag." In analyses not presented here, a 1975 measure was incorporated. The findings were almost identical. *Social-Insurance Program Experience, 1967* is measured by a nation's number of years of experience with social-insurance programs between 1933 and 1967. For more details, see Cutright (1965). (Source: Bornschier and Heintz [1979])

Most research has found Mauldin and Berelson's (1978) family-planning program effort index to be a strong predictor of fertility decline, net of the effects of various measures of socioeconomic development. Indeed, the evidence suggests that family-planning effort has a stronger effect on aggregate fertility change than does development (see especially Tsui and Bogue 1978; Cutright and Kelly 1981; Menard 1983). However, these studies tended to use essentially cross-sectional independent variables as predictors of fertility change. Nolan and White (1984, p. 82) emphasized that, while studies of such a "mixed longitudinal and cross-sectional design" are common, "the literature contains no direct evidence that *change in the postulated determinants* of fertility has been associated with the expected patterns of fertility change" (emphasis added). Consequently, they conducted a "trends analysis" of the effects of *changes* in independent variables on fertility change. However, they did not use the family-planning effort index in their analysis.

The recent publication of an updated 1982 family-planning program effort index by Mauldin and Lapham (1985) makes it possible to examine the effects of both *change* in family-planning program effort from 1972 to 1982 (rather than just program effort in 1972) and economic *growth* (rather than the cross-sectional level of development) on fertility *trends*. This study will, therefore, use cross-national data to control for *trends* in development and family planning.

This will be accomplished by controlling for both level of economic development (i.e., 1965 GNP per capita, logged to correct for skewness) and the rate of economic growth between 1965 and 1977 (i.e., the average annual increase in GNP per capita from 1965 to 1977, made available by Bornschier and Chase-Dunn 1985, from World Bank data). This will permit an estimate of the effect of "growth" between 1965 and 1977, net of "level" in 1965.⁶

⁶ Previous research has found the relationship between level of economic development and fertility change to be nonlinear (see especially Bollen and Entwisle 1984; Nolan and White 1983). In analyses not presented here, I conducted the usual test for curvilinearity: both level of development and its square were entered into the equations simultaneously as independent variables (see Weede

The longitudinal effects of family-planning program effort will be captured by including both the 1972 and 1982 FPE scores in the equations simultaneously. When early (1972) and later (1982) measures of an independent variable are included in a panel equation, the estimated effects of the later measure on the dependent variable are net of the effects of the earlier measure. Therefore, such a model estimates the effects of change in the independent variable (in this case, family-planning program effort) on change in the dependent variable (i.e., crude birth rate). It is the parameter estimate of the later measure that is interpretable (see Timberlake and Kentor 1983).⁷

Dependent Variables

Scholars disagree on the relative merits of crude birth rate and total fertility rate as dependent variables in analyses of this sort. Entwisle (1981) argued that "the comparability of cross-national fertility studies is not unduly affected by choice of fertility measure." Therefore, this study uses crude birth rate data for 1984 and 1965 from the

1986 *World Development Report* to compute the dependent and lagged dependent variables. The use of this lengthy lag period is appropriate because the effects of dependency on demographic and economic phenomena act slowly (see Kentor 1981; Bornschiez and Chase-Dunn 1985). Other studies that used a panel model employed considerably shorter lag periods; this may account for some general lack of support for the distorted-development hypothesis. To test this possibility, a second analysis that substitutes 1980 crude birth rates for the 1984 measure will be conducted.

Given the potential of heteroskedasticity, I present parallel analyses with these birth rates in both their logged and unlogged forms. I then compare parameter estimates across the resulting sets of equations. If they do not vary dramatically, the possibility of heteroskedastic disturbances is reduced.

Direct and Indirect Effects

The model of fertility change specified above identifies and estimates dependency's direct effects only. However, recent research has stressed the need to specify more complex models and to examine flows of effect (Tolnay and Christenson 1984; Nolan 1988). Moreover, the view that dependency retards fertility decline by "distorting" development implies an indirect effect. Therefore, I will also examine the indirect effects of dependency on fertility by defining dependency and level of development as exogenous variables and using the GEMINI program developed by Wolfle and Ethington (1985) for the data analysis.

Structural Analysis

While I have couched this study primarily in terms of a test of the dependency-distorted development hypothesis, the research has considerably broader theoretical implications. It moves away from individual-level analyses and toward macroanalytic or *structural* explanations of fertility change (cf. Ryder 1980, 1983).

FINDINGS AND IMPLICATIONS

In Table 1 (the correlation matrix), school enrollment is highly correlated with level of development, social-insurance program his-

1980; Jagodzinski and Weede 1981; Nolan 1983). Since curvilinearity was not apparent in any of the analyses, equations which include the polynomial term are not presented.

⁷ Because this procedure inevitably includes two highly correlated independent variables in the analysis, multicollinearity may be present. In this research, the two FPE measures are highly correlated ($r = .75$). However, the coefficient is a bit below the .8 level that Lewis-Beck (1980, p. 60) cites as a "signal" of potential multicollinearity. Furthermore, when the 1982 FPE measure is regressed on all the other independent variables (i.e., "the preferred method of assessing multicollinearity" according to Lewis-Beck 1980, p. 60), the R^2 equals .71. While this indicates that the independent variables are intercorrelated, it also shows that 1982 FPE is far from a perfect linear function of the other independent variables. Lewis-Beck suggests that high multicollinearity is present only when the R^2 in such an equation is near 1.0 (p.60). Finally, if high multicollinearity is present, parameter estimates become unreliable in part because this condition produces large standard errors. This, in turn, results in insignificant coefficients. In the present case, however, the 1982 FPE coefficient is significant in every equation examined (see below). Therefore, it appears that multicollinearity is not a problem in this portion of the analysis.

Table 1. Correlation Matrix with Means and Standard Deviations (coefficients based on $N=62$ are above the diagonal; coefficients based on $N=59$ are below the diagonal)

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	Mean	Deviation
1. CBR, 1984 ^a														3.64	.26
2. CBR, 1984	.99													39.15	9.11
3. CBR, 1965 ^a	.86	.83												3.80	.11
4. CBR, 1965	.86	.84	.99											45.02	4.84
5. GNP per capita, 1965 ^a	-.34	-.35	-.20	-.21										10.42	.84
6. Economic Growth, 1965-77	-.49	-.44	-.25	-.23	.22									225.61	199.22
7. Family Planning 1972	-.66	-.65	-.49	-.48	.28	.28								5.60	7.07
8. Family Planning, 1982	-.73	-.72	-.52	-.52	.17	.50	.74							34.77	27.35
9. Social-Insurance History, 1967	-.37	-.41	-.29	-.30	.41	.13	.22	.18						55.11	30.11
10. School Enrollment, 1965	-.71	-.72	-.53	-.53	.64	.39	.54	.54	.53					67.34	20.81
11. Child Death Rate, 1965	.67	.67	.50	.50	-.48	-.40	-.63	-.64	-.22	-.75					
12. Female Labor Force, 1965	.15	.19	-.01	-.01	-.54	-.26	-.18	-.19	-.34	-.38	.34				
13. Multinational Penetration, 1967 ^a	-.05	-.04	-.05	-.04	.55	.04	.23	.06	.31	.28	-.09	-.12		8.13	1.03
Mean	3.63	38.95	3.80	45.02	10.45	228.80	5.64	34.86	55.44	69.14	25.36	27.32	8.14		
Standard Deviation	.26	9.14	.12	4.94	.85	195.72	7.09	26.65	30.72	27.63	14.43	13.75	1.03		

^a Logged to correct for skewness.

tory, and both FPE measures. Such a pattern often signals high multicollinearity; however, when school enrollment is regressed on all the other independent variables (see note 7), $R^2 = .70$. This suggests that high multicollinearity is not present. Furthermore, when the remaining independent variables are "tested" in this manner, the R^2 s are much lower, ranging from .33 for social-insurance history to .59 for level of development. Consequently, all tests suggest that multicollinearity is not a problem in this analysis.

The results of the parallel panel-regression analyses of crude birth rate 1984 and logged crude birth rate 1984 on multinational corporate penetration and various combinations of independent/control variables are presented in Table 2. Equations (1) and (2) include all of the independent and control variables specified above in analyses of unlogged and logged crude birth rates respectively. Equations (3) and (4) delete variables found to be insignificant in the first two equations. This minimizes the number of independent variables per case. If overall results remain stable after such deletions, confidence in the findings is enhanced.

Equations (1) to (4) are based on a constant population of 59 nations. The variable deletion, however, yields a maximized population of 62 cases with no missing data on all remaining variables. Equations (5) and (6) replicate equations (3) and (4) for the larger sample. Again, these pairs of equations should be compared. A final equation, (7), analyzes influential cases (see below).

The results in equations (1) and (2) suggest strong support for both the structural analysis of fertility and the dependency-distorted development hypothesis.⁸ The pattern of results for both unlogged and logged dependent variables is similar, suggesting that such structural/institutional factors as level of economic development, economic growth, family-planning program effort increase, social-insurance program history, and primary-school enrollment levels are negatively related to fertility change. In other words, nations experiencing the most rapid economic growth, the most concerted family planning efforts, and so on, had the most rapid decline in fertility rates. On the other hand, nations with high levels of multinational corporate penetration/dependency experienced either an increase in their fertility rates or a relatively slow decline, net of the effects of the other independent variables.

⁸ In analyses of this type, where the units of analysis are large aggregates and where the number of cases is small or relatively small, the ratio of the unstandardized partial regression coefficient to its standard error is the most reliable guide to interpreting the "significance level" of coefficients (cf. Pedhazur 1982, pp. 242-43). Coefficients are considered significant if the unstandardized coefficient is at least 1.5 times the size of its standard error. This approximates a .10 level of significance and is frequently reported in quantitative cross-national research (cf. Weede 1980; Timberlake and Kentor 1983; Fiala 1983; Delacroix and Ragin 1981; Bornschie, Chase-Dunn, and Robinson 1978; Jaffe 1985).

Table 2. Panel-Regression Analysis of Crude Birth Rate, 1984 (CBR84) and Logged Crude Birth Rate, 1984 (LCBR84) on Multinational Corporate Penetration and Selected Control Variables (reported coefficients are betas)

	(1) CBR84	(2) LCBR84	(3) CBR84	(4) LCBR84	(5) CBR84	(6) LCBR84	(7) LCBR84
Lagged Dependent Variable	.52**	.55**	.53**	.56**	.53**	.56**	.55**
GNP per capita, 1965 ^a	-.13	-.14*	-.10	-.09	-.10	-.09	-.09
Economic Growth, 1965-77	-.10*	-.15**	-.09*	-.14**	-.10*	-.14**	-.11**
Family Planning, 1972	-.14*	-.14*	-.13*	-.13*	-.13*	-.12*	-.20**
Family Planning, 1982	-.20**	-.19**	-.20**	-.18**	-.19**	-.17**	-.12*
Social-Insurance History, 1967	-.10*	-.07	-.10*	-.06	-.10*	-.06	-.09*
School Enrollment, 1965	-.16*	-.15*	-.15*	-.14*	-.17**	-.15*	-.14*
Child Death Rate, 1965	-.03	-.03					
Female Labor Force, 1965	-.03	-.07					
Multinational Penetration, 1967 ^a	.17**	.16**	.16**	.13**	.15**	.12**	.12**
R^2	.89	.91	.89	.91	.90	.91	.91
Adj. R^2	.87	.90	.88	.90	.88	.90	.89
N	59	59	59	59	62	62	61

^a Logged to correct for skewness.

* B is at least 1.5 times its standard error.

** B is at least twice its standard error.

Equations (3) to (6) reveal remarkable stability and a reaffirmation of these conclusions, despite the deletion of the insignificant child-death rate and female labor-force variables and the subsequent change in case base. However, the strong support found for the distorted-development hypothesis is contingent on this particular model specification. In analyses not presented here, two measures of classical dependency were substituted for multinational penetration, and crude birth rate 1980 was substituted for crude birth rate 1984. In the former equations, with 1984 crude birth rate as the dependent variable, neither foreign-trade structure nor commodity concentration had significant effects on fertility change. In the latter analyses, with 1980 crude birth rate as the dependent variable, multinational penetration was not significantly associated with fertility change over the shorter time period. These findings support the assertions made above regarding the theoretical importance of "the new dependency" and the methodological importance of maximizing lag time. They also suggest that Ward and Nolan and White were correct to predict dependency's positive effects on fertility, even though their specifications enabled them to document indirect effects only.

Influential Case Analysis

The stability of key results, despite the several dimensions of variation built into these analyses, strongly supports both the dependency-distorted development hypothesis and the idea of a structural analysis of fertility trends. However, given the recent demonstrations of the importance of influential cases in analyses of this sort (Dietz, Frey, and Kalof 1987; Muller 1986), it is prudent to carry this analysis one step further. Equations (5) and (6) present the most parsimonious and reliable assessment of the relationships under examination. I reexamine these equations for influential cases by following the procedure used by Muller (1986). He noted that "Cook's *D* is a summary measure of the extent to which a data point is influential" (p. 441). Using the regression diagnostics available in SPSS (see Hull and Nie 1981, pp. 94-121), I find no high values of Cook's *D* in equation (5). There is, however, one moderately high value in equation (6): South Korea has a Cook's *D* = .28. Moreover, it has by

far the highest Mahalanobis' distance score (28.5) in the sample, indicating unusual scores on the independent variables. Therefore, further examination is needed.

South Korea's values on the dependent and independent variables are revealing. Its crude birth rate in 1965 was 36, substantially below the population mean of 45. By 1984, the birth rate had dropped to 20, even further below the new population mean of 39. Thus, South Korea did experience a dramatic absolute and relative fertility decline. Furthermore, it had by far the highest rate of economic growth in the population (more than 3 standard deviations above the mean), and its increase in family-planning program effort was dramatic: from no measurable effort in 1972 to the nation with the highest FPE score in the population currently under examination by 1982. (These figures help to account for the high Mahalanobis' distance score.) On the other hand, South Korea's level of multinational penetration was modest (1.7 standard deviations below the population mean).

Given these data, the inclusion of South Korea in the population would be expected to have little effect on the overall relationship between dependency and fertility decline. However, its inclusion could be quite influential in terms of the economic growth and FPE coefficients. Equation (7) replicates equation (6) with this influential case deleted. (Diagnostics indicate that no other influential cases are present.) Not surprisingly, the economic-growth coefficient drops slightly, the 1972 FPE score is enhanced somewhat while the 1982 FPE score declines, and the penetration coefficient remains unchanged. Overall, however, equations (5) to (7) remain remarkably stable, and all the variables that were significant in equation (6) remain so in equation (7). Consequently, the overall implications of this research, namely the strong and consistent support for the dependency-distorted development hypothesis and the efficacy of structural analysis, remain.

Indirect Effects

Given this stability, the analysis of indirect effects will be based on the full model presented in Table 2, equation (2) (results for equation (1) are almost identical). Briefly, level of development has a strong indirect effect ($-.31$, $T = -2.73$), but the indirect effect of penetration is negligible (.04;

$T=.42$). This suggests that the effect of dependency on fertility change is primarily direct, but that the effect of development is both direct and indirect, with a substantial total effect that was not evident initially.

While the global indirect effects of penetration are negligible, it is still possible that specific flows of effect are worth noting. The two highest coefficients (both quite modest) are for logged crude birth rate, 1965 (.049) and economic growth (.019). From this perspective, penetration appears to have modest indirect effects on recent fertility through its effects on earlier fertility and economic growth. The latter finding is consistent with the distorted-development hypothesis and with previous research that, under quite different specifications, documented a strong negative effect of penetration on economic growth (Bornschiefer and Chase-Dunn 1985; London and Smith 1988). In sum, penetration slows fertility decline both directly and through its negative effect on economic growth.

Additional Implications

This research focuses on the contradictory findings regarding the effect of dependence on fertility. When dependence is measured by multinational corporate penetration and panel regression analysis is used for the largest available sample of noncore nations, and lag time is maximized, the results are unequivocal: penetration has a significant, positive independent direct effect on crude birth rate change between 1965 and 1984, net of the effects of six to eight indicators of alternative explanations in every equation examined. Even though several earlier studies failed to find such a direct effect, dependence clearly distorts development in ways that impede fertility decline. This conclusion is modestly supported in an analysis of indirect effects.

However, a number of other controversies still remain in the fertility literature and this research also bears on these debates. One such disagreement concerns the relative influence of economic development and family planning on LDC fertility decline. Focusing on the measures of level of development, economic growth, and both 1972 and 1982 FPE, and viewing all the other variables as controls, the results contribute to this second debate. Furthermore, the results of this "trends analysis" (Nolan and White

1984) diverge from those of previous analyses. Most earlier research suggested that family-planning effort has a stronger effect on fertility decline than development. This study finds that *both* an increase in family-planning program effort and economic growth have simultaneous significant negative effects on fertility change. Moreover, level of development has a substantial indirect effect.

Another debate concerns the effect of social-insurance program experience on fertility rate change (see Nugent 1985). Hohm (1975, p. 629), for example, found that "social security programs have a measurable negative effect on subsequent levels of fertility." However, Kelly, Cutright, and Hittle (1976, p. 583) concluded that "the negative relationships between social security and fertility as measured by Hohm are artifacts of inadequate statistical controls on national modernization levels and, therefore, are spurious."

When attention is focused on the social-insurance program history variable in Table 2, and all other variables are viewed as statistical controls for both "modernization" and other determinants of fertility decline, the results bear on this final debate. Specifically, a consistent, modest, negative relationship appears between social-insurance program history and fertility change. However, while this effect is statistically significant in all of the equations examining unlogged crude birth rates, it is significant in only one of the equations for logged birth rates (see equation [7]). The logarithmic transformation changes the substantive meaning of the analysis from an examination of the effects of the independent variables on simple fertility change to an examination of their effects on percentage rates of change. This finding suggests that social-insurance program experience is more closely associated with absolute declines in crude birth rates than with rapid rates of fertility decline. These results provide modest support for the view that social-insurance programs contribute to fertility declines (cf. Hohm's 1976 reply to Kelly et al.).⁹

⁹ There are several other issues in the quantitative, cross-national study of fertility that could profit from additional attention. This research has touched on two such areas: the study of the relationships between education and fertility and between the status of women and fertility. In both cases, there are many other dimensions of

In sum, this study strongly supports the view that several "structural" phenomena influence fertility change in noncore nations. Such intranational economic phenomena as level of development and rate of economic growth and such national/institutional characteristics as social-insurance programs and concerted family-planning program effort contribute significantly to fertility decline. On the other hand, an international economic phenomenon—multinational corporate penetration—acts as a countervailing force by distorting development and impeding fertility reduction.

APPENDIX: 62 Countries Included in the Analyses

Algeria	Malawi
Bolivia	Malaya
Brazil	Mali
Burma	Mauritania*
Burundi	Mexico
Central African Republic	Morocco
Chad	Nepal
Chile	Nicaragua
Colombia	Niger*
Costa Rica	Nigeria
Dominican Republic	Pakistan
Ecuador	Panama
Egypt	Paraguay
El Salvador	Peru
Ethiopia	Philippines
Ghana	Rwanda
Guatemala	Senegal
Guinea	Sierra Leone
Haiti	Singapore
Honduras	Sri Lanka
India	Sudan
Indonesia*	Syria
Iraq	Tanzania
Ivory Coast	Thailand
Jamaica	Togo
Jordan	Tunisia
Kenya	Turkey
South Korea	Uganda
Liberia	Venezuela
Libya	Zaire
Madagascar	Zambia

* Not included in the equations based on the smaller $N=59$.

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education and women's status than those employed in this paper. These could (and should) be subjected to empirical analysis (see Bulatao and Lee 1983; Mason 1987). Such efforts are, however, beyond the scope of this paper.

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ECOLOGICAL DEMOGRAPHY: ITS PLACE IN SOCIOLOGY*

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What might appear an outrageous assertion is made in behalf of demography and human ecology, namely, that the outcast twosome can handle the core of sociology—the study of societies and social systems—with more rigor, elegance, and coherence than any single inner-circle sociological paradigm. I make little more than an opening statement in defense. Those who agree with it as well as those who reject it are urged to compare the power of their favorite paradigms with those they do not like in handling a common core of sociological problems. Such comparative analyses will help accomplish two things: a clarification of the major differences between paradigms and the identification of lacunae, the removal of which makes each paradigm more powerful in addressing the core of the discipline. The plurality of paradigms may thus actually be a resource that can be used to strengthen competing paradigms, making sociology progressively mature.

At the risk of sounding imperialistic, I start by asserting that, contrary to the popular image, ecological demography (a partnership between demography and human ecology) promises the most systematic and comprehensive treatment of the core of sociology—the study of societies and social systems. I do not intend in this short essay to present a full-scale defense of this assertion; rather, I indicate how a defense might proceed. Assertions regarding the demography-sociology and ecology-sociology connections^{1, 2} that

have been made in the past include the following:

The science of population, sometimes called demography, represents a fundamental approach to the understanding of human society (Davis 1949, p. 551).

Eschewing a formulation of . . . [the] problem in terms of the individual or the culture trait, the ecologist takes the aggregate as . . . [the] frame of reference and deliberately sets out to account for the forms that social organization assumes in response to varying demographic, technological, and environmental pressures. In this way, the ecologist seems to be contributing to the maintenance of a traditional sociological interest in explaining forms of organization and changes therein (Duncan and Schnore 1959, p. 144).

When examined from an ecological standpoint, social evolution and social organization are subject matter for human ecology. They can, of course, be examined from other viewpoints as well . . . (Duncan 1964, p. 77).

Human ecology is an attempt to deal holistically with the phenomenon of organization (Hawley 1986, p. 7).

These assertions are of the form "X can do Y," while mine is of the form "X can do Y much better than anything else can." I am sure others make equally strong claims about their own specialties. Such claims and counterclaims are signs of a healthy discipline *if members of various camps actively com-*

latter's macro-level emphasis, which does not help in sociologists' search for explanations and interpretations of individual-level phenomena.

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¹ Demographers have frequently complained that sociologists have tended to ignore demographic processes in their research and that sociology primers do not give adequate attention to population phenomena (Nam 1982, p. 366). Such complaints have been accompanied by the usual plea for a change of heart—to pay more attention to demographic structure and dynamics; it looks as though such pleas have fallen on deaf ears.

² As for human ecology, although it was cultivated initially by sociologists, textbooks on contemporary sociological theory seldom mention the subject, and primers of sociology, if they mention it at all, do so simply to give a flavor of the spatial dimension of human interrelationships. Hawley (1986, p. 7) surmised that sociologists tend to ignore human ecology because of the

pare the cognitive structures of competing paradigms.

I remember hearing during my graduate student days one of my professors saying that sociologists do not lend their ears to demography or human ecology because these fields have little to say about sociology proper. Since then, off and on, I have heard more specific charges, such as that demography is atheoretical, that it has little to contribute to the study of social organization, that human ecology is weak in power analysis, and that it ignores normative influence. In this essay, I address some of these specific charges.

After stating what I mean by demographic and human-ecological perspectives, I shall indicate what in my judgment is a reasonable specification of the core of sociology and briefly address the question of whether demography and human ecology are strange bedfellows, as some scholars seem to think. This will be followed by an examination of power relations, organizational populations, individualistic orientations, and normative pressures viewed from human-ecological and/or demographic standpoints. Next, I discuss whether demography is atheoretical and then address demography's grip on the core of sociology. Finally, I look at human ecology, as seen from the perspective of input-output analysis.

Although I present little more than an opening statement in defense of the ecology-demography twosome's case, I hope it prompts scholars to seriously compare different paradigms, keeping an eye on the power with which each paradigm handles a common core of sociological problems.

DEMOGRAPHIC PERSPECTIVE

Scholars generally agree that demography is the scientific study of population structure and dynamics and their determinants and consequences. Population structure means population size, composition, and distribution; population dynamics means change in population structure, with special attention to fertility, mortality, migration, and social mobility, which are the components of population change.

Demographers distinguish between the count of persons based on where they happen to be at a particular point in time (*de facto* population) and where they usually reside (*de jure* population). In demographic usage,

population refers to human occupants of a geographical territory (country, region, etc.); I postpone for a while remarks on the concept. Other concepts have straightforward definitions—composition stands for makeup, distribution for geographic spread, fertility concerns births, social mobility means change of trait (e.g., from “single” to “married”), and so on.

If we focus on just the denotative aspect of the population concept and imagine that it stands for any collection of objects, with a clear definition as to who or what belongs to the collection, it is easy to think of the population of households in a country, the population of formal organizations in the world, the population of school children in a city, or the population of diseases in Africa. Whether such populations are “meaningful” for a demographer cannot be determined without specifying what the demographer is attempting to do. In any case, a demographic perspective for studying any given population emphasizes both the structure and dynamics of the population, as well as their determinants and their consequences.

One adopts a demographic perspective in the study of the family, for example, when the emphasis is on a systematic study of the number of families by type (size and composition) and geographic distribution; changes in these over time; and components of these changes, namely family formation, shift in family size and composition, family dissolution, and family migration, *and* (1) covariates of the changes in the number of families by type and distribution; (2) those of geographic mobility of families; (3) those of changes in the rates of family formation and dissolution; and (4) those of changes in the probabilities and timings of transition from one category of family size and composition to another.

Here the family is viewed as a cluster of persons. Any such cluster has a size (the number of individual members) and a composition (makeup in terms of relationship to a “marker” and other traits involving, for example, school enrollment, labor-force participation, illness, pregnancy, parity, or retirement. The size of the family changes as persons are attached to or detached from the marker (e.g., as the marker becomes a parent or a widow, or widower). Focusing on a potential marker, a family is formed when a new cluster is formed around him or her

(e.g., through marriage); the family migrates as the marker migrates; or it "dies" (is dissolved) as the marker dies. When one of the surviving members is designated to be a marker, a new family is born.

HUMAN-ECOLOGICAL PERSPECTIVE

From the viewpoint of human ecology, *population* is a set of individuals in an interdependent system of activities (functions). Each activity produces certain outputs. The ingredients used in the production of an output are called inputs, which are indeed outputs of one activity or another. The input-output flows among activities tie the activities into an *interdependent whole*, or *system*. The individuals who produce or consume outputs of the activities involved in the system form the population tied to the system. Thus, from a human-ecological point of view, "population and organization [or system] enter into the definitions of one another" (Hawley 1986, p. 21). (A brief outline of the input-output approach to the study of interdependence is presented later in this paper. Familiarity with the usual dictionary definitions of the terms *input* and *output* is enough to follow the presentation until then.)

Along with the two concepts, population and interdependent system of activities, human ecologists use the concepts *environment* and *technology*. They distinguish between the biophysical and social environments of a system. The former consists of "physiographic features, climate, soil characteristics, plant and animal life, mineral and other materials" (Hawley 1986, p. 14) that *affect or are affected by the system that is envired*. If the life lived by population A influences or is influenced by the life lived by population B, then A is a part of B's social environment, and vice versa. Hawley (p. 14) used the term *ecumenic environment* instead of social environment.

Technology comes into play when inputs are combined into outputs and outputs are stored or transported to locations where they are used as ingredients (inputs) in the production of the usual kinds of goods and services or of such things as health, prestige, and so forth. The initial letters of the four concepts—*population*, *environment*, *system*, and *technology*—spell *P-E-S-T*; if we replace the *S* by *O*, for *organization*, we obtain, after

a slight rearrangement, the more appealing mnemonic device *P-O-E-T* (Duncan 1959).

Human-ecological orientation is thus primarily concerned with the production, distribution, and consumption of goods and services, the nature of the interdependence among these activities, the population involved in them, the technology used, and the relationship of all these to the environment. Simple functions of the kind that individuals can carry out are usually joined with other functions to form more complex functions carried out by complex (higher-order) units, each requiring the services of two or more individuals. Complex units emerge when demand arises for outputs that cannot be produced by simpler units acting separately (see Hawley 1986, p. 67 for a brief discussion of the conditions that promote the emergence of complex units). Two broad classes of complex units are recognized in human ecology: corporate and categoric units. "An assemblage of simple units that are functionally differentiated and symbiotically integrated constitute an organic-like or corporate unit" (p. 68). The family-household and the village are among the simplest corporate units. The label *categoric unit* is applied when the underlying interdependence is based on similarities of constituent units; guilds, clubs, and professional associations are examples (see pp. 70–73 for a brief discussion of the impetus to the formation of categoric units).

So far I have alluded to features of the human ecological orientation that all human ecologists recognize. Now I wish to emphasize a feature that is less widely noticed. Consider the concept of population. At first blush, it might appear that the counting unit is the human individual. But reflection reveals that the emphasis is on *person-time contributed to production and consumption activities*. There are, of course, people (e.g., infants; patients in the intensive-care unit of a hospital) whose contribution of person-time is exclusively linked to consumption. Also, some person-time contributions (e.g., a neurosurgeon's) require much longer training than others. Finally, considering production and consumption together with the level of technology, the same number of person-years can sustain various levels of production of goods and services. Thus, even if the U.S. population were to remain stationary from now on, the scope of the art of living of the

population potentially can expand without bound. Human ecology seeks to identify the linkage between the dynamics of human interdependence and the pursuit of the art of living.

THE CORE OF SOCIOLOGY

I have not been able to pinpoint what is generally considered distinctive about sociology, let alone what is agreed upon as its core. Lazarsfeld (1970) held that "sociology has not developed around a positive subject matter but as a residual activity, filling in the blank spots in an intellectual map" (p. 62). To Smelser (1967, p. 5), on the other hand, sociology is "the scientific study of *all that is social* in the human condition" (emphasis added). This resembles the Comtean encyclopedic view of what sociology is or should be. Inkeles (1964, p. 2.) saw the scope of sociology in the answers to three questions: "What did the founding fathers say?" "What are contemporary sociologists doing?" "What does reason suggest?" To Duncan and Schnore (1959, p. 132), "... many would grant that the study of society as a system of pattern of organization constitutes the core problem [of sociology], whatever other preoccupations it may have." Peter Rossi (1959), commenting on the Duncan-Schnore article, conceded that the "proper study of sociology is social organization," and added

On this perspective there is probably the greatest degree of agreement in our discipline. That the studies we make rarely attend to this major commitment is not only a measure of our youthful deficiencies as a discipline but also indicates how easily we have been deflected into fascinating but peripheral side issues (p. 146).

Let me use the label *core of sociology* for the systematic study of interdependence within and among social organizations. I would insist that, since organizations serve people and people staff (or serve) organizations, any systematic study of interdependence within and among organizations has to take into account the demographic dynamics involved.³ Further, no one would deny that

the environment in which organizational dynamics takes place should be part of the picture one tries to draw. If we now recognize that organizations are producers and consumers, it becomes clear that the study of organizations cannot ignore the production technology (ways of producing goods and services and the ingredients that go into the production processes). The core of sociology is then the study of the *P-E-S-T* complex, in its structural and dynamic aspects. What Mayhew (1980) has called structural sociology comes close to the same thing. I contend that *human ecology is not peripheral to sociology. It is sociology proper.*

ARE DEMOGRAPHY AND HUMAN ECOLOGY STRANGE BEDFELLOWS?

Although, theoretically speaking, population phenomena receive primary attention in human ecology, most human ecologists have been preoccupied with spatial distributions, and whenever other aspects of population processes have been addressed from a human ecological perspective, the treatment of the subject matter has frequently been unimaginative. This has been so partly because analysts have been in a hurry to fit regression models to their data before carefully working out conceptual details of the *P-E-S-T* complex.

Curiously, some demographers have begun to believe that human ecology and demography are strange bedfellows. As Charles Nam (1982, p. 362) put it, "Despite academic confusion about the links between demography and human ecology, the two are as distinct in their main thrusts as almost any two social sciences."

This view is based on the belief that the population concept of human ecology is irreconcilable with demography's population concept. Within the human ecological framework, for an aggregate of human individuals to be a meaningful population, it must have acquired, or be in the process of acquiring, unit character (Hawley 1981, p. 120). Given the importance demographers attach to group properties (e.g., norms as determinants of demographic processes such as fertility) and to delineating "meaningful" geographically defined populations (for purposes of census tabulations, migration research, and the like), they should have no difficulty in accepting the principle that for a population to be meaningful, it must have acquired, or be in the

³ As Mayhew (1980, p. 338) pointed out, most structuralists would insist that explanation of social organization presupposes a knowledge of the social network's underlying demographic structure as well as its biophysical and social environment.

process of acquiring, relationships that bind the members to each other directly or indirectly. This does not imply that once this criterion has been accepted a demographer can find a great deal of help in the existing human ecology literature. Far from it. But, then, demographers have a habit of stating their problems in such a way that in the search for their solutions no theoretical orientation with a macrolevel emphasis can be of any help. As Norman Ryder (1980, pp. 199-200) stated:

Possessed of the ineluctable truth that no explanation at the sociocultural level can be complete without a demonstration of an explicit instrumentality at the individual level, and suspicious that properties of the collectivity are myths invented by Durkheimians, and ideologically offensive as a threat to the concept of free will, they proceed directly to the finest level of detail attainable, unaware or uncaring that they will drown in the morass.

SOME SOCIOLOGICAL PROBLEMS AS HUMAN ECOLOGISTS OR DEMOGRAPHERS SEE THEM

Power Relations from the Ecological Perspective

The term *power*, as it applies to social relations, has been defined in various ways in the literature. Blau (1964, p. 117) defined it as the "ability of persons or groups to impose their will on others despite resistance through deterrence either in the form of withholding regularly supplied rewards or in the form of punishment inasmuch as the former, as well as the latter, constitute, in effect, a negative sanction." Sanctions and securing compliance are also emphasized in conflict theorists' use of the concept (see, e.g., Dahrendorf 1959, p. 166). Robert Dahl (1968, 12:407), however, emphasized dependence in his article on power in the *Encyclopedia of the Social Sciences*: "At the most general level, power terms [power, influence, authority, persuasion, inducement, coercion, compulsion, force] in modern social sciences refer to *subsets of relations among social units such that the behaviors of one or more units (the responsive units, R) depend in some circumstances on the behavior of other units (controlling units, C).*"

The same article equated power relation (*C* has power over *R*) and the corresponding causal relation (*C*'s behavior is causally linked to *R*'s behavior). It is noteworthy that a

number of analysts (e.g., Dahl 1963; March 1957) have proposed the amount of change in the behavior of *R* attributable to *C*'s behavior as a measure of *C*'s power over *R*. To some scholars (e.g., Parkin 1971, p. 46), "... power need not be thought of as something which exists over and above the system of material and social rewards: rather it can be thought of as a concept or metaphor which is used to depict *the flow of resources which constitutes the system*" (emphasis added).

Duncan and Schnore (1959, p. 139) pointed out that there is a striking formal similarity between the concept of power in sociology and the concept of dominance in human ecology. Consider two strata of organizations, say, farmers and traders. Assume that farmers do not trade their products on their own—the traders do this for them. Assume further that inputs such as fertilizers and farm machinery also reach the farmers exclusively via the traders. Focusing on the system of relationships thus defined between the farmers and traders, it is clear that the farmers have no contact with the system's social environment except through the traders. The farmers are dominated by the traders to the degree that reliance on trade largely determines the use of local resources. The dominance of the traders over the farmers becomes stronger if the traders organize themselves to form a united front. By the same token, the farmers may themselves unite and increase their power over the traders, to the degree that the continuity of the activities of the traders in question is contingent on receiving products from the farmers.

Thinking in terms of the interdependence among various activities, it is easy to see that power can be defined in terms of inter-activity input-output flows. For example, in one application, Luca Perrone (1984) measured what he called "positional power" of a given industry as a function of the value of goods and services flowing from that industry to others. Of course, Perrone could have measured power in other ways from the same data: he could have considered both the input and output flows rather than just the latter; he could have used the total dollar value of output generated throughout the economy by an additional dollar spent in the given sector; or he could have focused on the reduction in employment resulting directly or indirectly from a given percent decline in the output of that sector.

Using the perspective of inter-activity input-output flows, let us examine a number of particular setups to illustrate how human ecologists view power relations.

Categoric unit as a political force. The motto "union is strength" captures the essence of the notion that, "by engaging in uniform, parallel actions when faced with a common threat, a population can mobilize a formidable power" (Hawley 1986, p. 37). A simple example is a temporary action group formed to oppose a town's impending decision to convert a playground into a parking lot. In circumstances such as this, categoric units emerge to render a needed service. I will shortly return to this point.

Might is right. The saying that "the power to destroy is the power to tax" reflects such relationships as that between a modern-day racketeer and the shopkeepers of his domain. The racketeer *creates* demand for the "protection" he offers and levies a sort of tax for his protective service. The earliest successful, as-yet-undifferentiated, racketeer-capitalist-bishop-labor boss-governors must be credited with inventing such an arrangement (Hockett 1973, p. 549).

Governments. Governments can be viewed as service organizations, involved in preparing for defense, protecting the environment, promoting the development of technology and human resources, and so on. Activities such as building military strength, formulating a population policy, and implementing one plan or another, of course, use inputs from organizations other than the government. Inputs in some instances may be in the form of resistance. Thus, environmentalists might be opposed to offshore oil exploration. Opposition of such interest groups may be thought of as inputs in the form of impact-study reports, for they address the consequences of the implementation of a policy or program. Certain interest groups, if their opposition is ignored, are able to make the implementation of the policy very costly, in extreme cases dwarfing the corresponding benefits. Assessment of implementation costs, of course, is part of the usual inputs to policy formulation. Certain interest groups are sometimes able to prevent the adoption of policies they disfavor by articulating their positions and, if necessary, threatening to make the implementation costs high. In India, a proposal for a law that provided jail sentences and fines for couples of childbearing age who

refused sterilization after having three or more children had to be shelved because of widespread opposition. An extreme case in the opposite direction occurs when a policy is adopted on the basis of inputs from as few as one person or one study group appointed by the chief executive of a country. The recent adoption of a one-child policy in the People's Republic of China comes close to such an extreme case. China has apparently been successful in implementing this policy mainly because of a well-organized family-planning program that facilitates compliance and a coercive system that very strongly discourages noncompliance.

Conflicts. Although human ecology does not put the concept of conflict on center stage, the dominance-subdominance distinction and the concept of categoric unit correspond respectively to the distinction between the holders and nonholders of authority and the concept of interest groups in conflict theory. Furthermore, the postulate that the human being "possesses an inherent tendency to preserve and expand life to the maximum attainable under prevailing conditions" (Hawley 1986, p. 5) points to the potential tension between the haves and the have-nots and between the majority and the minority that is discriminated against. If a given standard of living is attainable to one segment of a population, it is natural for other segments of the population to seek to attain the same standard of living. The way in which this state of affairs affects the activity concerned with the development of human resources falls within the province of human ecology.

Power as a system property. Assume the system resembles a causal chain $x_1 \rightarrow x_2 \dots \rightarrow x_n$, where the environment is at one end. Assume also that power relation is equivalent to a corresponding causal relation, as suggested by Dahl (1968). Then, from the property that the correlation between pairs of remote links in simple causal chains of this kind is less than the correlation between pairs of closer links, one can infer that (Hawley 1986, pp. 36-37): "... power [relation to the environment] is disproportionately concentrated in the key function [situated closer to the environment], and it diminishes as a function becomes further removed from direct environmental contact." The relationship between merchant employers and artisan employees in urban areas of agrarian societies is a

case in point (Lenski and Lenski 1987, p. 191, citing Thrupp 1962.).

There are thus, as I see it, a number of ways in which power relations enter the human-ecological framework.

Organizational Populations

What has come to be known as a population ecology perspective—also referred to as the ecological-evolutionary perspective—has recently been presented as a fruitful approach to the investigation of questions such as the following (see, e.g., Hannan and Freeman 1977, 1984; Freeman and Hannan 1983, Carroll 1984, 1985):

- Why are there so many kinds of organizations? (What accounts for the size and composition of an organizational population?)
- How do social conditions affect the rates at which new organizations and new organizational forms arise, the rates at which individual organizations change structure, and the rates at which organizational populations die out. (What are the determinants of the birth, mobility, and death rates of organizational populations?)
- How do social, economic, and political environments affect organizational diversity? (What are the determinants of stratification within a given organizational population?)
- What is the impact of environmental uncertainty on the mortality rates of generalist and specialist organizations, the latter being those not capable of withstanding anything beyond a small range of environmental conditions? (What exogenous factors account for the differential mortality within organizational populations?)
- Is there a convergent tendency for organizational structures, and if so, how to account for it? (What do we know about the intracohort mobility pattern that prevails in organizational populations?) (The so-called principle of isomorphism holds that organizations that frequently interact with one another converge on a common form [Hawley 1986, p. 84]. Hannan and Freeman [1977] suggested that one way to isomorphism is via competition and selection at the population level. Also see DiMaggio and Powell [1983].)

Similar questions apply to the population of cities (see, e.g., Dendrinos and Mullally 1985, pp. 27–28). To me, such concerns as these go to the heart of sociology.

Individualistic Orientations

Mayhew (1980) argued that most of the

influential theoretical orientations in sociology are individualistic, treating individuals as the units of analysis and the so-called “human behavior,” in both its objective and subjective aspects, as the *explanandum*. He contended that individualistic orientations have not helped to improve our grip on the core of sociology.

Consider, for example, the conception of sociology as “a science which attempts the interpretive understanding of social action in order thereby to arrive at a causal explanation of its course and effects. In ‘action’ is included all human behavior (either overt or purely inward and subjective) when and insofar as the acting individual attaches subjective meaning to it” (Weber [1922] 1964, p. 88). (The focus here is on the indicated specific conception of sociology, not on Weber’s own works on various sociological phenomena.)

Mayhew (1980, p. 366) pointed out that by this conception, any phenomena that individuals are not aware of will be excluded from the sociological domain. Among the phenomena excluded will be population size, composition, distribution, and changes in these (whether the reference is to human populations or organizational populations), these being matters that most people are unaware of or to which they pay little attention.

It is pertinent in this connection to recognize that some scholars (e.g., Robson 1969) think that the ecological approach is incomplete because it eschews the subjective values and purposes of individual actors. This is not the place to enter into the debate between system theorists who ignore and voluntaristic-action theorists who emphasize subjective factors and states. I stress, however, that to me it makes little sense to require that, since individuals are involved in what goes in society, analyses of all societal processes pay attention to intraindividual psychological processes.

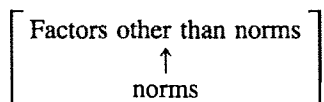
Normative Pressures

Shifting attention from the individualistic orientation to normative pressures may seem to involve a shift from micro- to macrolevel considerations. But the actual use of the concept of norms in model building and empirical research indicates that this is not necessarily the case (Rosenberg 1980). Be that as it may, some believe that one way to

make the product of a theoretical exercise or empirical research sociological is to incorporate into it the concept of social norms. Demographers have often chosen this route to get their wares accepted into sociology. Human ecologists, on the other hand, have resisted this temptation. Has human ecology's capability to study the core of sociology been diminished significantly because the concept of social norms has not been given much attention?

While no consensus exists regarding a formal definition of social norms, few would disagree that rules of conduct apply to actors in given contexts, that there are standard ways of doing certain things, and that blueprints exist for behavioral expectations. The disagreement is about the utility or necessity of incorporating direct measures of norms in model-building exercises (see, e.g., Mason 1983). With specific reference to fertility levels and trends, suppose normative pressure on population segments operate in this way:

Group membership→



→fertility

where normative pressure is just one of the intermediate variables operating between group membership and fertility, and, furthermore, the influence of norms on fertility operates only through factors other than norms (e.g., perceived costs and values of children). Given this framework, the force of logic requiring the inclusion of direct measures of normative pressures in fertility models is minimal, if memberships in various groups are already represented. The point is that the utility or necessity of including social norms in one's model depends on the corresponding theoretical assumptions (Mason 1983, p. 414).

IS DEMOGRAPHY ATHEORETICAL?

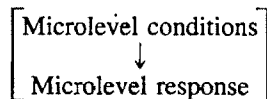
Have demographers succeeded in bringing order to their data using sociological frameworks? In such a short essay, I can only look briefly at a few works.

The now-disfavored classical formulation of the demographic transition theory distin-

guishes three types of societies: pretransitional, transitional, and posttransitional. Pretransitional societies are said to be in a state of high growth potential, and posttransitional ones in a state of incipient decline. According to the theory, societies are visualized as moving from an initial state of high growth potential to an end state of incipient decline, through an intermediate state of high growth. Note that the states are demographic states. From a theoretical standpoint, it is important to show how the transitions between demographic states are linked to transitions involving other aspects of society. Labels such as "low-income economy" and "interdependent and specialized, market-oriented economy" (Coale and Hoover 1958) illustrate how scholars have attempted to specify the relevant social and economic covariates of demographic transition. For the outcome of a more systematic effort in this direction, see *Human Societies* (1987) by two nondemographers, Lenski and Lenski, who use an ecological-evolutionary perspective. Demographers have by and large concentrated on specifying factors that seem to have triggered changes in one or more of the components of population change.

Davis (1963), for example, proposed that sustained mortality decline, in the context of economic development, causes an incompatibility between people's accustomed demographic behavior and their ability to attain their mobility aspirations. This in turn causes a multiphasic response involving postponement of marriage, nonmarriage, limitation of fertility (within marriage), and migration. Thus, the answer to a macrolevel question concerning fertility decline is couched in terms of microlevel considerations:

Macrolevel conditions→



→Macrolevel change

Cross-level linkages and macrolevel dynamics are given only very limited attention.

Caldwell's (1976) restatement of the demographic transition theory is predicated on the following propositions: (1) only if the family becomes nucleated will fertility drop; (2) industrialization is not a necessary condition

for fertility decline; and (3) fertility decline starts with the reversal of the direction of intergenerational "wealth flow," which, in all traditional societies, has been from the younger to the older generation. These propositions, concerned with macrolevel phenomena, are supplemented with the microlevel proposition that there is a family size that optimizes parental pleasure, at each level of the parents' ability to afford children "in societies of every type and stage of development" (p. 355). How macrolevel factors such as population structure and dynamics enter into the microlevel optimizing calculations is unclear.

Another class of models available in the literature can be called decision-making models. Typically, these treat macrolevel factors as contexts in which individuals make decisions. Macrolevel changes themselves receive no attention.

Yet another class of theory-building exercises concerns what has come to be known as "theories based on the institutional context of reproduction." Adnan (1982) developed the thesis that the stratification system in a country may perpetuate high fertility. He described a system (Bangladesh) consisting of three strata: landlord-cum-moneylenders at the top, landless laborers at the bottom, and sharecroppers and small landholders in the middle. He theorized that this class structure militates against technological innovation in farming, which, in turn, perpetuates the existing class structure. Further, the *de facto* dominant class, because of its control of resources, prevents social mobility and shapes the fertility levels of all classes. McNicoll (1982) advanced a similar theory that a sufficient condition for a decline in fertility level of many of the Asian farm populations is a significant change in the sharecropper-landlord relationship, e.g., from a diffuse, patron-client type relationship (involving the labor of family members, a credit system, an element of social security, and so on) to one with a much narrower, temporary scope. These theories and the pertinent empirical evidence remain rudimentary at best. But they illustrate approaches that focus on linkages between elements of socioeconomic structure and dynamics on the one hand and parts of population structure and dynamics on the other.

Brief as this survey has been, it reveals that many theories are available in the demo-

graphic literature. Many of these use an individualistic approach, based on notions directly borrowed from or closely resembling what one finds in sociological literature. Whether this borrowing from sociology has helped demographers to order their data remains an open question (see, in this connection, Namboodiri 1986).

DEMOGRAPHY'S GRIP ON THE CORE OF SOCIOLOGY

If we grant that population structure and dynamics are at the core of sociology, all significant works on demographic processes and structure are important contributions to sociology. Recognizing that many scholars might feel that this is too broad a claim, here are a few specific potential contributions to sociology from demography.

As is now widely recognized, the age-by-time surface, showing the numbers of persons by age at successive points in time, provides a framework for informative analyses of how society operates and changes (Riley 1987). The study of the age-by-time surface (and the history of birth, death, and migration rates that lies behind it) is one of the demographer's specialties. In fact, demography is the study of the time pattern of the numbers of persons in the various combinations of achieved and ascribed characteristics in a population.

The changes in the simple age-sex composition of a population have clear implications for pension costs, school crowding, promotion rates among workers in organizations, and many other concerns (see Keyfitz 1985).

With respect to the question whether the family should take more responsibilities for the care of the old and the infirm, rather than leaving most of the burden to the state, the question arises of how many family members are potential caregivers for persons in need of care. Demographers provide the answer, based on histories of birth, death, marriage, and divorce rates.

Family sociologists stand to gain from the works on family demography, a currently emerging subfield (see Bongaarts, Burch, and Wachter 1987, for recent articles in the subfield). Matters that have received attention in the literature include new conceptual and analytical approaches to the study of family life cycle; analyses of marital careers of women, trends in living arrangements, and

changing family composition over the life course; and forecasting models for households, housing needs, and the number and composition of kin.

Many of the investigations in family demography use what has come to be known as the multistate life-table methodology, which has been applied to the study of, among other things, physical and mental well-being, "life in school," and "life in the labor force." This versatile technique is useful for the study of the birth-death-mobility processes of human population as well as of organizations.

I have already referred to works on organizational demography. One of the problems of the study of the organizational community (the forest of organizations, rich in organizational species and interspecies interactions) has been stability or steadiness. Mathematical models developed by bioecologists for examining the conditions for stability in biological communities have been applied to the study of organizations (see the works of Carrol, Freeman, and Hannan cited earlier; also see Dendrinos and Mullally 1985). A different approach to the same topic is through the input-output framework (Namboodiri 1985). Hawley (1986, pp. 52-54) has stated succinctly how the steady-state notion is helpful in the study of change.

HUMAN ECOLOGY FROM THE POINT OF VIEW OF INPUT-OUTPUT FRAMEWORK

A quick look at the human ecological approach from the perspective of input-output analysis will help us think clearly about interdependence of activities, intraorganizational structure, interorganizational interdependence, the *P-E-S-T* complex, and other important sociological problems.

The Input-Output Framework

The input-output framework that I have in mind was originally developed for the study of sectoral interdependence of an economic system (Leontief 1936). The economy is assumed to be segmented into a number of sectors, each of which may be specialized industries or aggregations of them. For example, a seven-sector model for the U.S. economy may distinguish between (1) agriculture, forestry, and fishing; (2) mining; (3)

construction; (4) manufacturing; (5) transportation and trade; (6) services; and (7) other activities. For a model that uses close to 500 sectors, see Ritz, Roberts, and Young (1979).

The data needed to construct the input-output model of an economy consist of distribution by destination of each sector's products. These flows are measured for a particular time interval, usually a year. Very often, they are expressed in monetary terms. Alternatively, they could be expressed in terms of energy units. It is also permissible to retain the original units of measurements.

Assume for simplicity that each sector produces only one output. Speaking for convenience in terms of monetary units, let $z_{ij}(t)$ be the value (in dollars) of the i th sector's product flowing to the j th sector in period t . The following balancing equation accounts for the distribution (by destination) of the i th sector's product:

$$x_i(t) = z_{i1}(t) + \dots + z_{in}(t) + y_i(t) \quad (1)$$

where $x_i(t)$ is the monetary value of the total output of sector i , n is the number of sectors into which the economy has been segmented, and $y_i(t)$ is the part of $x_i(t)$ going to exogenous purchasers. These flows (for $i = 1, \dots, n$) can be displayed in a two-way table, with originating sectors as rows and destinations as columns. For numerical tables see, for example, Chapter F of *Historical Statistics of the United States* (U.S. Bureau of the Census, Department of Commerce 1975).

One is often interested in examining the implications of the assumption of a fixed proportionality of inputs in the production of outputs. Under this fixed recipe assumption, if a_{ij} is the dollar value of sector i 's product needed to produce a dollar's worth of sector j 's product, then the dollar values of inputs, from sectors $1, \dots, n$, used in producing sector j 's total output $x_j(t)$ can be expressed as

$$a_{1j}x_j(t), a_{2j}x_j(t), \dots, a_{nj}x_j(t)$$

respectively. If sector j does not need sector k 's output, then $a_{kj} = 0$. The a_{ij} s thus defined are called *technical coefficients*. Once the time-invariance of the technical coefficients is accepted, the following equation system

makes explicit the dependence of interindustry flows on the total outputs of each sector:

$$x_i(t) = a_{i1}x_1(t) + \dots + a_{in}x_n(t) + y_i(t), \quad i = 1, \dots, n \quad (2)$$

Straightforward extension gives equation systems such as this, showing regional interdependence, societal interdependence, and so on. Thus, if there are two or more regions, we have the output of any sector in region A flowing to sectors within A and to sectors in regions other than A. We may think of the former as intraregional input-output flows and the latter as "between-region trade." Parallel terminologies can be used in the case of multinational interdependence.

The matrix of technical coefficients is likely to change over time (see Allen and Gossling 1975), reflecting shifts in production technology, births of new organizations to meet new demands, and so on. *Analysis of changes in the matrix is part of the study of social change—growth and evolution of interdependence.*

In the usual input-output models, households, governments, foreign enterprises, etc., are treated as exogenous. But one could easily endogenize any or all of them. To endogenize the household sector, one adds a row and a column for that sector and inserts in the table flows of labor (person-time) to the various sectors from, and of goods and services from various sectors to, the households. Note that the household sector's output is person-time, to produce which households use goods, services and person-time. We may, of course, stratify the household sector into, for example, upperclass, middle-class, and lower-class, reflecting the differences in "standard of living" (goods and services used up in producing person-time outputs).

It is important to recognize the distinction between an activity (e.g., manufacturing automobiles) and the units that perform the activity. Let us refer to the latter as organizations. Let us assume for convenience that each organization produces only one output. Now, a given activity may be performed by a number of organizations; there may be many farms producing food, many schools providing education, etc. Since all organizations engaged in a given activity (e.g., producing "educated" youth) may not use the same input structure, it makes sense to

use input structure to stratify the organizations. Let

$$x_i(t) = \alpha_{i1}x_1(t) + \dots + \alpha_{im}x_m(t) + z_i(t), \quad i = 1, \dots, m \quad (3)$$

be the equation system corresponding to equation (2), after endogenizing the households, government, etc., and stratifying the various sectors as necessary.⁴

Each stratum of organizations (e.g., each stratum of schools or automobile companies) thus formed may be treated as analogous to what bioecologists call *species*. An analogy may also be drawn between the interdependence depicted in the equation system (3) and what bioecologists call *biological community* (e.g., a rain forest rich in diversity of species and between-species interactions). Dendrinos and Mullally (1985, pp. 30–36) discussed similarities and dissimilarities between biological communities consisting of different animal or plant species and interdependent cities in a region or country. Their discussion made it clear that one should not carry the analogies mentioned above between biological communities and organizational populations too far, but that selective use of the methods of bioecology can help analyze organizational populations.

Over the past few decades, bioecologists have made rapid strides in empirical and theoretical analyses of biological communities. These developments have largely been ignored by sociologists. Given the analogies mentioned above between species and a stratum of organizations and between an interdependent system of organizations and a biological community, it is natural to search in the literature on bioecology for develop-

⁴ Karl Fox and his colleagues have expressed the view that time allocations can be comprehensively studied using Roger Barker's notion of "behavior setting" (e.g., a bank, a barber shop, a worship service in a church, a mathematical class in a high school). Barker introduced the label "genotype" for behavior settings with identical or closely similar programs of activities. Thus, different local banks form one genotype. Fox (1985) estimated that about 400 genotypes would be enough to cover all behavior settings that absorb person-time in modern industrial societies. The Barker-Fox notion of genotype may be of some use in deciding how to stratify organizations.

ments that might be of use in the study of interdependence among "species" of organizations. There is a plethora of mathematical models dealing with such topics as species-species interaction and the growth and stability of n -species communities. Mathematical ecologists have also examined questions such as whether more complex communities are also more stable, and whether diversity (which depends on the total number and composition of species forming the community) affects stability.

This is not the place to comment on this vast literature. To give a flavor of it, however, I consider what has come to be known as the Lotka-Volterra model of the interaction between two species. It consists of a pair of differential equations:

$$dx/dt = \alpha x - \beta x^2 - \gamma xy$$

$$dy/dt = \epsilon y - \zeta xy - \eta y^2$$

where x and y represent the respective densities of the two competing species and α , β , γ , ϵ , ζ , and η are positive parameters. As is well known (see, e.g., Keyfitz 1968, pp. 288–90), stable coexistence requires that $\alpha/\beta < \epsilon/\zeta$ and $\epsilon/\eta < \alpha/\gamma$. An interesting interpretation of these inequalities is the following: If the intrinsic rates of increase of the two species are equal, i.e., if $\alpha = \epsilon$, then the condition for stable coexistence become $\beta > \zeta$ and $\eta > \gamma$, which may be thought of as requiring that the within-species competition be stronger than the between-species competition. If, for example, the two species are, at least in part, dependent on different resources, then these inequalities are likely to hold, while if the two species have identical resource requirements, the more efficient one will "eliminate" the other. In applying this model to strata of organizations (e.g., public schools and private schools), we may use x and y to stand for their respective sizes (e.g., numbers of schools in each strata). Hannan and Freeman (1977) have done this stating the implication, parallel to the one just mentioned, as "If two populations of organizations sustained by identical environmental resources differ in some organizational contingencies, that population with the characteristic less fit to environmental contingencies will tend to be eliminated" (p. 943).

I must emphasize that the interpretation based on the notion of competition is just

that, *an interpretation*. The model, as a mathematical model, can stand other interpretations.

In any case, one must be careful not to push the "competition theory" of bioecology too far. Currently ecologists are debating among themselves whether biological competition really occurs, whether it is a common phenomenon, and whether it is an important factor in structuring ecological communities (see various articles in *American Naturalist* 122). Apart from this, competition (each affecting the other negatively) is not the only pairwise interaction possible. If the effect of one species on the other is denoted by, say, + for stimulating, – for suppressing, and 0 for neutral, then pairwise interactions fall into the following six types:

- ++ (mutualism or symbiosis)
- +– (predator-prey and the like)
- +0 (commensalism)
- (competition)
- 0 (amensalism)
- 00 (indifference)

Note, however, that competitive interaction has received fuller mathematical treatment than the other types.

The point I wish to emphasize has little to do with the particular payoff one may expect from pursuing the competition theory. What is most important is that once the aggregate of organizations is classified by industries and those within industries into homogeneous strata, it becomes possible to approach the study of organizational dynamics from various standpoints.⁵ One approach is the perspective of multiple populations in interaction (see Keyfitz 1968). The approach adopted by Hannan and Freeman (1977) illustrates one way of using this strategy, with an emphasis on competition. As already mentioned, one might emphasize other types of associations. Corwin (1987, pp. 110–121) discussed the advantages and disadvantages of the population ecology framework for organizational analysis. The organizations may also be viewed as successive cohorts going through birth-mobility-death processes. Thus, an organization just formed has a probability of growing into a higher-order one, by age a , or

⁵ Dendrinis and Mullally (1985, pp. 35–36) discussed how to modify some of the formal models of bioecology to make them applicable to urban ecology.

by the same age fissioning into two or more lower-order ones, merging with another one, or dying. Deaths may be due to different causes, mergers may be of different kinds, and so on. This type of life-course analysis of any cohort of organizations is an integral part of the demography of organizations. To apply the life-course analysis, it is necessary to have clear specifications of causes of deaths, organizational states among which mobility takes place, and factors associated with each type of change. As Corwin (p. 118) pointed out, the relevant taxonomies and typologies are only beginning to appear.

A byproduct of such demographic contributions to organizational analysis, of course, is the delineation of the changing context of the demographic process of person-time, the more common focus of demography. Clearly then, demography and ecology stand to gain a great deal from each other.

THE CASE

To repeat, ecological demography focuses on concerns that are central to sociology. It deals with evolution of societies (see, on this point, Duncan 1964; Lenski and Lenski 1987), with contemporary societies, with territorial communities, with formal organizations, with interorganizational interdependence, with interregional interdependence, with structure, with change, etc. It provides a framework for fruitful application of the demographic perspective to the study of human, as well as organizational, populations. It provides a powerful perspective for a careful examination of intersocietal dependence, the focus of world-system theorists. No other single approach in contemporary sociology does all these so well.

CONCLUDING REMARKS

Demography is improving its capability to address crucial questions about population structure and processes. Development of subfields such as family and organizational demography has accelerated the rate at which demography has expanded its hold on parts of the core of sociology. Human ecology is becoming more formalized enhancing its capability to address structural and process-related issues of communities and societies more systematically and comprehensively than other perspectives in sociology have ever

been able to do. A partnership between demography and human ecology is not only possible but inevitable. What this partnership is likely to accomplish in the near future prompts me to forecast that the twosome will before long be widely recognized as the core of sociology. Many demographers and human ecologists who were once optimistic about this are now less sanguine about the prospect (Hawley 1988, personal communication). But it is within the power of demographers and human ecologists to make the forecast come true. A partial agenda, based on the comments I received on an earlier version of this paper, might read: hasten the development of subfields such as family and organizational demography; assess the contribution demographers have made to the study of stratification; demonstrate the power of the ecological perspective in the analysis of power relations, conflict processes, and the like; show how the ecological perspective can formalize the *essence* of the world-system theory; and take another close, comparative look at the Marxian and human-ecological formulations of societal structure and change (see, in connection with this last item, Hawley 1984). The task is to identify and remove lacunae in the ecological-demographic approach. Attempting to strengthen a theoretical orientation should not be construed as aiming at a theoretical monism. All the talk about multiplicity of paradigms in sociology and the increasing diversification of the field has not yet made me pessimistic about the future of the discipline. As I see it, the presence of a plurality of paradigms in the discipline can be turned into a resource *if* advocates of each compare the power of theirs to that of others in handling a common core of sociological problems. I contend that the ecology-demography twosome will be hard to beat in the contest.

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RESEARCH NOTES

ISLAMIC AND WESTERN EDUCATIONAL ACCOMMODATION IN A WEST AFRICAN SOCIETY: A COHORT-COMPARISON ANALYSIS*

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Theories of the global expansion of Western mass education tend to assume the replacement of indigenous educational systems. Data from two surveys of youth in an Islamic, West African city, conducted five and nineteen years after national independence, indicate a convergence in the social forces that predispose attendance in the new and old systems. Using a standard nine-variable model of educational attainment, of five variables that had significant but opposite effects on Islamic and Western schooling attendance in the first cohort, only one significant opposing effect still operated in the second. Average years of attendance increased for both Western and Islamic schooling. Hypotheses are offered to explain the apparent structural accommodation of the two systems.

Current explanations of world educational development stress that international educational expansion follows a dynamic of its own, independent of other trends in a society toward horizontal or vertical differentiation or interest-group conflict. This is not to say these factors have no influence on the course of educational development in a particular society; rather, they alone cannot explain the dramatic spread of mass education in the Western rational tradition.

A major issue in assessing this position is the potential for variability in the response of the host society and its indigenous institutions. In particular, conditions antithetical to the spread of Western education may not be destroyed, but may lead to accommodation and coexistence of the indigenous and West-

ern systems. This is especially likely to occur in societies that have well-developed, preexisting Eastern-oriented educational systems and strong local authority structures. In this paper we examine the special case of educational accommodation in such a society in the Islamic region of northern Nigeria.

Islamic leaders in this region have long thought that Western education corrupts youth by instilling Western material values and secular beliefs (Paden 1973; Csapo 1981). This resistance, coupled with the British selective policy toward educational expansion in the North, resulted in northern Nigeria lagging far behind the rest of the country in modern education (Bowles 1969). It was not until 1976, 16 years after independence, that universal primary education became the official government policy for the North (Bray 1981). Public-opinion campaigns encouraged parents to enroll their children in the greatly expanded primary-school system, although attendance remained noncompulsory. Previously, Western education had been available primarily to children of elites and others who either aided the British during colonial rule or had good connections with those in power after independence.

By contrast, mass education in the sacred Qur'anic text had been available for centuries. The institutions of Islamic learning traditionally were the critical socializing

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mechanisms for developing a communal and regional identity. The sacred knowledge of the Qur'an and the various Islamic ritual observances provided the core cultural content of this identity. Perhaps even more importantly, the experience of Islamic schooling served as a social entry point into the elaborate adult network of patron-client relations that underlay the social organization of this community (LeVine 1966). Consequently, most northern Nigerian youth today are still expected to achieve at least moderate levels of Islamic schooling.

Currently, initial Qur'anic instruction is available at preprimary and primary levels. Most youth receive Qur'anic instruction in the late afternoon or evening and on Saturdays (weekday mornings are usually reserved for Western primary schooling). This instruction may occur under the traditional tutelage of a *mallam* (Islamic teacher) at his residence, but it is increasingly held in a Western classroom instructional format, often in the same buildings where Western education classes are held in the mornings. These Western-style Islamic institutions are called *Islamiyya* schools. In addition, an increasing number of government-supported *Islamiyya* schools are separately housed and offer complete instruction in both the Western and Qur'anic curricula. Parents who send their children to these schools seek to avoid the predominant Western value emphasis associated with the Western primary schools. Partly in response to these concerns, most of the Western schools at minimum offer a daily period of instruction in Islamic Religious Knowledge, using a neighborhood *mallam* to handle this instruction.

In our research locale, at the secondary level the government supports approximately four Western schools for every one Islamic school. In the Islamic institutions, however, over half the students are enrolled in programs leading to Western-school teaching licenses. Only seven percent of all secondary-school students are enrolled in programs that end in the exclusively religious Higher Muslim Studies certificate (Kano State Ministry of Education 1979).

In this paper we examine the educational attainments of two cohorts of 17-year-old males, one surveyed in 1965 and the other in 1979. Although only 14 years apart, several historical events markedly differentiate the life experiences of these two cohorts. Most

notably, national growth in the modern sector of the economy resulted from the 1970s petroleum boom and brought most northern Nigerians into the cash-market economy. This created a new popular demand for modern technology and social amenities. Federal revenues became available for a variety of development projects, including universal primary education for the North (Arnold 1977).

We examine the socioeconomic and social-psychological forces underlying the continuing enrollments in Islamic education and the expanding enrollments in Western education as indicators of educational accommodation. A trend toward enrollment increases in both and a common pattern of social antecedents would suggest that parents who value Islamic education for their youth increasingly value Western education as well, and vice versa. One consequence of such convergence might be increased demand for institutional accommodations that permit schooling in both Islamic and Western curricula. Alternatively, a trend toward declining Islamic-school enrollments and expanding Western enrollments would imply replacement of the indigenous system with the Western system. Also, increasingly divergent background influences would suggest differential selection of students for the two systems.

DATA AND METHODS

Location and Sample

The city of Kano is the dominant urban center of northern Nigeria and one of the oldest cities in West Africa (Mabogunje 1968). With an estimated metropolitan population in 1979 in excess of one million, its ecology defines four distinct population groupings. The largest area and site of our research is Birni, the original walled city and home for the indigenous Muslim population.

We conducted household surveys of Birni young men in 1965 and 1979, using the same random-area sampling design. The two resulting cohorts consisted of all 17-year-old males residing in a random 20 percent sample of Birni wards. This design yielded 591 completed and validated interviews in 1965 and 632 in 1979. The interviews were in Hausa, the language of the region, and were conducted by indigenous interviewers.

Variables and Analysis Plan

Separate ordinary-least-squares regression equations were estimated for each cohort, the dependent variables being years attended of Islamic schooling and of Western schooling. The overall structure of the equations is comparable to standard educational attainment models containing socioeconomic background and social-psychological mediating variables. The principal difference is the inclusion in each equation of three variables that capture key dimensions of the local Islamic social structure. The nine predetermined variables are respondent's report of father's ethnicity, Western schooling, occupation, income, and Islamic brotherhood membership, together with the respondent's mental ability, ideal education preference, mosque attendance, and perceived parental encouragement of Western schooling.

All variables except mental ability and the two dependent variables are scaled either as single or multiple dummy variables. Mental ability is indicated by the number of correct responses to six items from the Similarities General Intelligence Test (Schwartz 1964). Years of Western and Islamic schooling range from zero to 12 years. The Fulani ethnic group represents the traditional but declining ruling aristocracy of Kano, dating to a conquest in the early 19th century; accordingly, father's ethnicity is dichotomized as Fulani versus Hausa or other. Father's Western schooling is coded as one or more years versus none. Father's occupation is

divided into the four main dummy categories shown in Table 1, with the omitted referent category being farmers and farm workers. Income level is divided at the median of 10 pounds per month in 1965 and 100 Naira per month in 1979. Islamic brotherhood is membership in the Tijjaniya or Quadiriyya brotherhoods (Paden 1973) versus being an unaffiliated Muslim. Parental encouragement of Western school is dichotomized as encouragement (very much or a little) versus discouragement (very much or a little). Ideal education level is secondary or higher schooling versus primary schooling or less, "for people like yourself, if Western schooling were freely available and there were no obstacles." Mosque attendance for prayers is dichotomized daily versus less often (a few times a week, once a week, once or twice a month, or rarely). Table 1 gives the means and standard deviations for all variables entered in the analysis.

COHORT COMPARISONS

Education and Socioeconomic Level

Table 1 shows that over the 14-year period, participation in Islamic as well as Western schooling increased. The average years of Western schooling more than doubled to 6.2 years and the mean years of Islamic schooling also increased 2.5 years to 7.7 years. In 1965, nearly all youth (93 percent) attended at least one year of Islamic schooling and almost half

Table 1. Means and Standard Deviations of Variables in the Regression Analysis of Islamic and Western Educational Attendance, Kano Young Men in 1965 and 1979

Variable Name	1965 Cohort		1979 Cohort	
	Mean	S.D.	Mean	S.D.
<i>Father's</i>				
Fulani ethnicity	.272	.446	.117	.322
Western schooling attendance	.311	.463	.566	.496
Occ.: White collar or professional	.169	.376	.180	.385
Religious mallam	.130	.337	.040	.195
Trader or shopkeeper	.327	.469	.430	.496
Artisan, craft, or laborer	.161	.368	.177	.382
Income level, above median	.435	.496	.467	.499
Religious brotherhood membership	.684	.465	.375	.485
<i>Respondent's</i>				
Mental ability	2.65	1.44	3.44	1.39
Parental encouragement	.579	.494	.714	.452
Ideal education level	.824	.381	.903	.296
Mosque attendance, daily	.530	.500	.476	.500
Islamic school, years attended	5.20	3.48	7.66	3.62
Western school, years attended	2.84	3.52	6.15	3.99

(47 percent) also had at least one year of Western schooling. The corresponding values in the 1979 cohort were 98 percent and 78 percent, respectively.

Table 1 also documents the improvement in socioeconomic origins of Kano youth, coupled with increases in the origin-related mediating variables. Perhaps the most critical shift is the 26-percentage-point increase in fathers with some Western schooling, reflecting the earlier, post-World War II educational expansion. Substantial increases also occurred in family income levels, with associated changes in indicators of modern social and physical well-being. Respondents who reported their dwellings had electricity increased from 30 to 74 percent, had tap water from 12 to 59 percent, had a radio from 45 to 89 percent, and had a television from zero to 53 percent.

The three indicators of traditional status showed declines. Fewer than half as many youth claimed Fulani ancestry, reflecting the increasing rates of intermarriage with the majority Hausa and the latter's rise as the

dominant ethnic group in the new nation. Youth whose fathers were employed primarily as *mallams* declined 9 percentage points, and those whose fathers belonged to Islamic brotherhoods declined 31 points. Yet, approximately half the boys continued to report they prayed daily at the mosque.

Determinants of Islamic Schooling

The two cohorts showed a substantial difference in the pattern of determinants of Islamic schooling (Table 2). In essence, the findings indicate that only in the 1965 cohort was Islamic schooling being taken as an alternative to Western schooling. Looking first at the total effects of the background variables (in parentheses), the years of Islamic schooling youth received were significantly greater if the youth's father belonged to a religious brotherhood, had no Western schooling, and held any of the urban, nonfarm occupations except those in the white collar/professional category. And of these urban occupations, the strongest effect occurred for sons of *mallams*.

Table 2. Regression of Years of Islamic and Western Schooling on Family Background and Individual Characteristics, Kano Young Men in 1965 and 1979, OLS Metric Coefficients

Predetermined Variables	Islamic		Western	
	1965	1979	1965	1979
<i>Father's</i>				
Fulani ethnicity	-.001 (-.131)	.437 (.506)	.659** (1.366)**	.751 (.988)*
Western schooling attendance	-.537 (-.815)*	.954** (1.021)**	.873** (1.708)**	1.265** (1.672)**
Occ.: White collar or professional	.740 (.630)	-.681 (-.599)	1.600** (2.742)**	1.000* (2.422)**
Religious mallam	2.223** (2.218)**	1.268 (1.198)	-.752* (-.695)	-1.177 (-1.480)
Trader or shopkeeper	.993* (.963)*	.714 (.728)	-.382 (-.255)	.042 (1.101)**
Artisan, craft, or laborer	1.596** (1.536)**	-.453 (-.425)	-.512 (-.313)	-.133 (.990)*
Income level, above median	-.345 (-.483)	.313 (.420)	.242 (.748)**	.753** (1.277)**
Religious brotherhood membership	.954** (.959)**	1.475** (1.494)**	-.602** (-.672)*	-1.504** (-1.328)**
<i>Respondent's</i>				
Mental ability	.250**	.300**	.490**	.605**
Parental encouragement	-1.000**	.123	3.018**	2.325**
Ideal education level	-.739*	-.112	1.044**	3.796**
Mosque attendance, daily	.485	.141	-.386*	-.081
Constant	4.133	5.134	-.976	-1.704
R ²	.128**	.106**	.590**	.433**
n	591	632	591	632

Note: Values in parentheses are the total effects of the background variables, when the four mediating variables are omitted from the equation.

* $p < .05$.

** $p < .01$.

Years of Islamic schooling were unrelated to the father's ethnicity or income level.

Entering the mediating variables in the equation, years of Islamic schooling were higher if the respondent's parents discouraged Western education and the respondent expressed a low ideal level of Western education. Mental ability, however, had a positive effect and frequency of mosque attendance was nonsignificant.

By 1979, the pattern of determinants was quite different. Of the six variables having significant effects in 1965, the only two with the same effects in 1979 were mental ability and father's brotherhood membership. Nonsignificant characteristics of the father now included his occupation as well as income level and ethnicity. The most notable changes, however, were in those variables tapping exposure and attitudes to Western education. A youth's valuing and receiving parental encouragement for Western education no longer reduced his years of Islamic schooling. And, in a reversal from 1965, having a father who had some Western education actually increased a youth's years of Islamic schooling. Thus, in the 1979 cohort, the years of Islamic schooling a youth received no longer were associated with having negative attitudes toward Western schooling and a family background of no Western education.

Determinants of Western Schooling

By contrast, the pattern of determinants for years of Western schooling showed little variation across cohorts. All five origin-status variables had significant effects for both cohorts. Years of Western schooling were greater if the youth's father had some Western education, worked in a white-collar/professional job, had a high income level, was a member of the traditional Fulani ruling class, and did not belong to an Islamic brotherhood. One variation in the effect of the occupation variable was that in 1979 sons of traders and craftsmen/laborers, in addition to sons of white-collar/professional workers, received significantly more Western schooling relative to sons of farmers.

The effects of the mediating variables were also largely stable. In both cohorts, mental ability, parental encouragement, and ideal level of Western schooling had strong positive effects. The only change was for mosque attendance, which in 1979 was no longer

negatively associated with years of Western schooling.

In summary, these findings suggest the perpetuation, modification, and growing accommodation of Western and Islamic educational systems. Both are increasing, and the social forces that enable and encourage Kano youth to achieve in one system of schooling increasingly have become the same forces that promote achievement in the other system. Stated more cautiously, with only one exception, these forces in 1979 no longer operated in opposite directions. In 1965 there were five such oppositional variables in our nine-variable model.

Three key findings highlight this convergence. First, while in 1965 youth with Western-educated fathers tended to receive increased Western but reduced Islamic schooling, in 1979 such youth tended to participate more in both schooling systems. Second, youths' ideal educational level and perceived parental encouragement of Western education in 1979 no longer reduced their years of Islamic schooling. Third, religiosity as measured by mosque attendance was negatively associated with Western schooling only in 1965. In consequence of these changes, the zero-order correlation between Islamic and Western schooling attendance years has changed from a significant negative value in 1965 ($-.217$) to a nonsignificant positive value ($.052$) in 1979.

The one source of stability in this changing pattern of determinants has been mental ability, which for both cohorts operated positively on attainment in either schooling system. This characteristic presumably has continued to be a prerequisite for advanced instruction in either the Islamic or Western curriculum.

DISCUSSION

It is still too early to predict the extent to which the growing mutual relationship between demands for Islamic and Western schooling will shape the emerging structure of the education system. In new nations such as Nigeria, where there has been an extensive and well-established non-Western educational system and an absence of strong centralized state control, one can envision that local and regional demands for preserving indigenous education may be able to compete effectively with the demands for modern Western

education. Clearly, as illustrated by this case, rejection and replacement of the indigenous education system is not automatic or inevitable.

Three features of the northern Nigerian case, however, may make this outcome unique. First, the British colonial policy of indirect rule purposely left intact the Islamic educational system of the region, and, in fact, assisted the traditional northern rulers in impeding the introduction of the Christian mission schools that had spread so rapidly in the South. Second, the Qur'anic instruction associated with this particular indigenous education system carries with it both a legacy of mass literacy and a modern world cultural significance that is uncharacteristic of most other such systems. Third, Nigeria's new petroleum revenues in the 1970s provided the locally controlled capital resources, permitting the further adaptation of Islamic education to more standard forms, improving its ability to compete with Western schooling. In historical settings where colonial policy was more hostile to indigenous educational institutions, where established systems were more selective and elitist, and where local resources were more limited, educational accommodation may be less likely.

To the extent that the emergent structural accommodation becomes more firmly established, these historical factors should be less important as internal cyclic processes reinforce the accommodation. For example, the incorporation of Islamic instruction into the Western schools may impose a continuing demand for Islamic-trained teachers that will help to ensure the importance of the Islamic curriculum in the total educational system.

At the societal level, cyclic reinforcement may already be operative, having to do with the complementary social import and usages of the two forms of education. Increasingly, Western education is providing the universalistic human-capital skills and credentials required in the modern-sector labor market. While it may be that advanced Islamic knowledge will provide the cultural capital

(Bourdieu 1973) that facilitates opportunities in the modern labor market, our informal observations in this society do not support this interpretation. The social structure of northern Nigeria is still substantially more communal and sacred than that of the advanced industrial societies where the cultural-capital concept previously has been found operative. To the extent its particular form of indigenous and Western educational accommodation survives, this societal difference may endure.

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WORK LIFE, FAMILY LIFE, AND WOMEN'S SUPPORT OF FEMINISM*

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Recent research has attempted to explain wide ideological divisions among women in terms of their different lifestyles and their subjective commitment to them. Special attention has been given to the potential effects of women's work and family life on their attitudes. This paper uses a large representative sample of American women to systematically evaluate these explanations for the first time. The evidence suggests that various aspects of women's family and work life do have consistent effects on women's support of a range of feminist goals, but the effects are smaller than several previous studies suggested. The analysis also suggests that the relative importance of these factors may be increasing and that work and family differences may become important lines of political cleavage in the future.

The struggle between feminists and their opponents continues to be one of America's most important domestic political conflicts. Because feminists have attempted to change the way people think about gender roles as one way to change the roles themselves, sociologists frequently have employed survey data to trace and understand the changes brought about by the women's movement. In addition, sociologists have studied how attitudes are influenced by the changing structure of gender roles themselves, especially labor-force participation. Recent research has shown that such participation tends to increase women's support of feminist goals, and that of their husbands and children (Mason and Bumpass 1975; Mason, Czajka, and Arbor 1976; Plutzer 1987; Powell and Steelman 1982; Smith 1985; Thornton, Alwin, and Camburn 1983).

Though several different studies have related labor-force participation to feminist

attitudes, the precise linkages are not well understood. This stems, in large part, from the practice of treating all employed women alike. Kathleen Gerson (1985, 1987) and Ethel Klein (1984) suggest that this practice is inappropriate. In particular, they suggest that satisfaction with work and family life, and relative commitment to domestic or nondomestic realms, may critically affect individual women's attitudes toward gender roles and feminist goals. In this paper, I use national survey data to examine how women's family life, employment experience, and work commitment interact to influence support of feminist positions. Because the meaning of employment may differ for men and women, different hypotheses and variables are appropriate for analysis of each gender. This study focuses on women only.

WORK LIFE AND FAMILY LIFE

Ethel Klein argues that women's labor-force experience leads to a feminist orientation for several reasons. First, labor-force experience may provide evidence that women can do traditionally male jobs as well as men (Klein 1984, p. 36). Such evidence makes untenable certain stereotypes that bolster traditional roles. Second, work experiences may expose women to types of discrimination that are hidden from traditional homemakers, leading to a greater openness to explicitly political arguments advanced by feminists (Klein 1984, p. 92). Third, for women who have not previously considered being financially inde-

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pendent of men, earning income may suggest the possibility of doing so, leading to rejection of traditional gender roles (Klein 1984, p. 69).

Kathleen Gerson (1985, 1987) has argued that women's support of feminism and feminist goals are not influenced by work experience alone but also by several subjective aspects of lifestyle. She argues that gains in women's opportunities have not touched all women equally. At the same time as opportunities have been created in nondomestic realms, many securities that women previously enjoyed have been eroded. Therefore, while many women support changing gender roles, other women may feel that such change further jeopardizes their current status. Specifically, Gerson points to commitment to either domestic or work life as the major source of ideological and political division among women today.

Gerson's (1985) in-depth interviews with 63 southern California women showed that each had initially leaned toward either traditional homemaking roles or toward less traditional nondomestic roles. However, these orientations were likely to change depending on their adult family and work experiences. If women who initially had strong commitments toward work life found their work to be satisfying, their orientation tended to remain the same. If, however, their work was unsatisfying or they found themselves in dead-end positions, their commitment to work weakened and they looked to family life as a source of satisfaction. Thus, Gerson (1985, 1987) argues that women tend to adopt attitudes that support the life commitments that they have made.

Gerson found a similar process among women with initial domestic commitments. Most of these women took their first job for reasons of economic necessity, with little commitment toward a possible career. However, when they encountered unexpected promotions, unexpected responsibilities, or other sources of satisfaction, they were likely to develop new commitments toward work and nondomestic life. Other women, dissatisfied with their marital and family life, sought in their work life an additional source of satisfaction. Gerson argued that these women are likely to adopt attitudes that legitimate their new life commitments (1987).

A similar argument is advanced by Kristen Luker (1984) in her study of 212 California pro-life and pro-choice activists. She explains

women's (and to a lesser extent, men's) adherence to pro-choice or pro-life politics in terms of the extent to which their lifestyles were traditional. Pro-life activists tended to have and value large traditional (patriarchal, heterosexual) families. Conversely, pro-choice activists tended to be single, divorced, or have small nuclear families. Pro-choice women were far more likely to have careers and they tended to view childbearing as something which, if not planned, would interfere with their life commitments.

To summarize, *commitment* towards one's lifestyle is hypothesized to be related to attitudes concerning abortion (Luker 1984), gender roles (Gerson 1985), and other issues important to feminists (Gerson 1987; Plutzer 1987). Gerson (1987) also advances a stronger version of this hypothesis, which minimizes the importance of other differences among women. She argues that "emerging divisions among women are not based on traditional class, ethnic, or economic cleavages, but rest instead on differences in work and family circumstances" (pp. 213-214), and that "variation within class levels in women's work and family commitments is as important as differences between classes" (p. 220). The relative importance of traditional political cleavages in comparison with those based on work and family has yet to be systematically assessed.

From the literature reviewed, I derived four major hypotheses that might be tested with data from a nationally representative sample of women:

HYPOTHESIS 1. *Women's family life is related to support of feminist goals with*

- a. The divorced and never married more feminist than those who are married or widowed, and
- b. The number of children negatively associated with feminist attitudes.

HYPOTHESIS 2. *Women's employment status and experience is related to support of feminist goals with*

- a. Women in the labor force more feminist than all others,
- b. Women who have never worked most traditional,
- c. The number of hours worked positively associated with feminism, and
- d. The proportion of the family's income earned by the woman positively associated with support of feminist goals.

HYPOTHESIS 3. *Women's expressed commitment to work is positively related to support for feminist goals.*

HYPOTHESIS 4. *Work and family life variables will explain as much of the variance in support of feminist goals as demographic and socioeconomic background variables.*

In testing these hypotheses, this paper contributes to the literature on gender roles, adult socialization, and on the contemporary political conflict between the women's movement and its opponents. The insights from several studies based on small nonrandom samples of women will be extended to a large, representative sample of American women. In addition, multivariate statistical methods permit evaluation of competing explanations that use such factors as education, race, religion, and place of residence. This analysis will not only help unravel the employment-attitude relationship but will weigh the importance of work and family versus other lines of political cleavage.

Multivariate analyses offer an additional advantage. Even if the women interviewed in some previous studies were representative, qualitative analyses do not permit distinguishing between true causes and spurious associations. Thus, the argument that women undergo substantial attitude change as a result of family and work experiences must be considered tentative at this time. This study is an attempt to disentangle spurious from causal components of the relationship between adult experiences and attitudes.

DATA AND METHODS

I use data from the General Social Survey (GSS), a national survey of approximately 1,500 adults, which has been conducted by the National Opinion Research Center most years since 1972 (for information about sampling, response rates, and other technical details, see Davis and Smith 1985). Each survey includes questionnaire items on many topics, including family roles, sexual mortality, and support for legal abortion and the Equal Rights Amendment. Because women's commitments are less crystallized as young adults, I have restricted my analysis to women aged 25 or older at the time interviewed. The analysis spans the years 1977 through 1985, but the periodic question

rotation used in the GSS means that only a few of these years will be used for each dependent variable. A copy of the SAS program that processed the data prior to analysis is available from the author on request (Plutzer 1988).

Dependent Variables

This study uses a variety of GSS questions to measure support for feminist positions. Although I do not claim that the items selected in any way define "feminism," they represent a range of issues central to almost all versions of feminist ideology and are all contested by various opponents of feminism. The precise question wordings and response categories are provided in Appendix A; in the remainder of this section, I briefly describe the dependent variables and my rationale for selecting them.

Support for the Equal Rights Amendment. The effort to ratify the ERA was one of the most intense battles between feminists and their opponents. A single questionnaire item, asked in 1977 and 1982, measures attitudes toward the ERA. It asks respondents to locate themselves on a four-point scale ranging from "strongly support" to "strongly oppose" the ERA.

Approval of legal abortion. Since the late 1960s, feminists and their opponents have been engaged in a battle over the availability of abortion in the United States. At one pole of the conflict are pro-choice advocates who support "abortion on demand." At the other pole are those who oppose abortion in all circumstances or those who make an exception only in those cases where the mother's life is in danger. In between are those who approve of abortion in some circumstances (e.g., cases of rape or incest, where the woman is financially unable to raise a child, etc.). To measure approval of abortion, I use a standard measure indicating the *number of reasons* that individuals believe justify legal abortion. The scale ranges from zero (radical pro-life position) to seven (abortion on demand).

Sexual morality. Though not always explicitly stated, strong feelings about sexual conventions are generally considered to underlie many of the conflicts between feminists and the New Right (see, e.g., Luker 1984; Petchesky 1984). Opponents of feminism typically assert that all nonprocreative sex is immoral. Feminists, on the other hand, tend to apply a situational ethic to most sexual

behavior between consenting adults. There is a difference concerning the acceptability of premarital and homosexual sex. To assess sexual mortality, I use a scale composed of two items. They ask if each (premarital and homosexual sex) is "always wrong, almost always wrong, wrong only sometimes, or not wrong at all."¹

Gender roles. An important goal of the women's movement has been to challenge traditional notions of a woman's appropriate place in society. Some opponents of feminism argue that women and men are inherently different and, therefore, have different roles to play (Luker 1984, pp. 159-61). To measure respondents' relative positions in this debate, I use a scale composed of three items: whether (1) women should run their homes and leave running the country to men; (2) the respondent would vote for a woman for president; and (3) men are better suited for politics.²

Women's family responsibilities. Opponents of feminism are not in total agreement concerning women's inherent inferiority in various social roles. Phyllis Schlafly (1977), for example, argues that women can—and do—compete with men in traditionally male-dominated fields. Such opponents of feminism tend to take the position that women should *either* work or be a mother but not attempt both at the same time. Schlafly and others argue that when women attempt to combine work and family commitments, the family, especially the children, is likely to suffer. To measure this sentiment, I have included a "family responsibilities" or "domestic gender roles" scale composed of four statements: (1) a working mother can establish just as warm and secure a relationship with her children as a woman who does not work; (2) it is more important for a wife to help her husband's career than have one herself; (3) a preschool child is likely to suffer

if her/his mother works; and (4) it is better if the man is the achiever outside the home and the woman takes care of the home and the family. Each asks the respondent to choose among evaluations ranging from strongly agree to strongly disagree.

Dependent variables: summary and assessment. The latter four scales all have high reliabilities (one measure of internal consistency, Chronbach's alpha, is reported for each in Appendix A), and all are composed of items that have been frequently employed in similar research. Because support of the Equal Rights Amendment is measured by a single item, its reliability can not be estimated and is likely to be low. This will limit the proportion of variance that the analysis might be expected to explain, limit the efficiency of estimates of the effects of all independent variables, and therefore make it harder to confirm hypotheses for this variable.

To facilitate interpretation of analyses, I have recoded items so that high scores on all scales represent the feminist position and low scores represent more traditional norms. In addition, each has been rescored to the same arbitrary metric, having a mean of zero and a standard deviation of one. Respondents who did not answer or replied "don't know" to any item are excluded from analyses on that particular dependent variable.

Independent Variables

A brief description follows; the precise coding can be inferred from the variable descriptions in Table 1.³

Work life and family life. I describe women's family and work status with several variables: (1) *Marital status*, three dummy variables represent whether the woman is married, divorced/separated, widowed, or single at the time interviewed; (2) *Number of children* ever born to the woman (missing values recoded to the mean); (3) *Employment experience*, with two dummy variables indicating whether the woman has either never been employed for as long as a year (omitted), is not currently employed, or employed at the time interviewed; (4) *Number of hours worked* by the woman if currently

¹ A third item concerning extramarital sex is sometimes included in this scale. Because infidelity is not routinely advocated by feminists and not an element of the rhetoric of the feminism-traditionalism debate, its inclusion would detract from the theoretical validity of the scale.

² A fourth item, concerning whether a woman should work if her husband could support her, is frequently included in this scale. This item, however, actually decreases the reliability of the composite and is thus excluded.

³ To facilitate replication by other researchers, the original SAS code that modified the raw GSS data is available on written request.

employed; and (5) *Proportion of family income* earned by the woman.

The measure of *commitment to work* is a single variable. This item asks women whether they would continue to work if they "were to get enough money to live as comfortably as you would like for the rest of your life." It is coded one for women who would continue to work and zero for all other women.

Other independent variables. To properly specify the models, it is necessary to include measures of other factors that also affect women's attitudes. I included measures of religious denomination, church attendance, place of residence, race, education, age, and the year each respondent was interviewed.

Missing values for attendance, education, hours worked,⁴ and the income measures are recoded to mean values, while those for the religion question (less than one-third of one percent) were grouped with those in the "none" and "other" categories.

Methods

For each dependent variable, two OLS regression models will be estimated. The first model regresses the dependent variables on the background variables and the objective measures of work and marital status. The second model adds the subjective measure of commitment to work. One final note is needed to explain the models. After estimating these 10 models, I repeated the analysis for each marital status because the effects of a few variables might differ for each family situation. Only one difference emerged from these explorations: the effect of the number of children for the divorced compared with all other women. To account for this difference, a cross-product interaction term is also included in each model.

Results of the regression analyses—two models for each dependent variable—are reported in Table 1. In addition to the usual estimates of unstandardized regression coefficients, R^2 , and report of the sample size, I have indicated the years for which each equation could be estimated. For Model 2, I

have also reported the net contribution to R^2 from the background, family-life, and work-life variable sets.

RESULTS

In the five estimates of Model 1, only weak evidence appears for the first hypothesis. On one hand, divorced women are significantly more feminist than married women in three of the five equations (actually in four out of five; if the ERA equation is re-estimated without the insignificant interaction term, the divorce variable is statistically significant). On the other hand, women who have never married are not substantially more feminist than married women. The number of children is a significant predictor of abortion attitudes only. For divorced women, however, the interaction term indicates that having many children is related to traditional attitudes about sexuality and family responsibilities.

In sum, women with the least traditional family situation—divorced without children—are more feminist than other women, but other differences in family structure have little impact. The *net* contribution of the family-status variables, as a set, is statistically significant in all five equations but never accounts for more than one percent of the variance.

Is the effect of divorce reversible or relatively permanent? To assess this, I divided the married based on whether they had ever been divorced; I then re-estimated the five equations. In every instance, married women who had been divorced were slightly more feminist, but the effects were never large enough to be statistically significant. This is consistent with Gerson's suggestion that attitudes vary with one's *current* status.

Examining the work-life variables in Model 1 yields mixed support for Hypothesis 2. Women in the labor force are generally more feminist than women who are not but who have some work experience. Women with some work experience are generally more feminist than women who have not worked for as long as a year, but this difference is statistically significant only in the regression of the gender-roles scale.

The number of hours worked has little effect on support of feminism. Increased hours leads to greater support of feminism only in the area of family responsibilities. The women's family-responsibilities scale is the

⁴ Hours worked is coded to the mean so that its role as a regressor permits distinctions to be made among working women only; i.e., it is now orthogonal to the measure of labor-force status.

Table 1. Regression of Feminist Goal Measures on Background, Family Life, and Work Life Variables

	Dependent variables, sample size, years included, and model labels									
	Equal Rights Amendment (n = 1,250) (77,82)		Abortion Approval Scale (n = 3,254) (77,80,82,84,85)		Sexual Morality Scale (n = 2,151) (77,82,85)		Gender Roles Scale (n = 1,682) (77,82,85)		Family Responsibility Scale (n = 1,414) (77,85)	
	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
Intercept	.062	.127	2.251	2.280	.087	.098	-2.459	-2.458	-4.603	-4.600
Year surveyed	.004	.003	-.032*	-.033*	.007	.006	.025*	.025*	.051*	.051*
Age in years	-.0069*	-.0065*	-.0006	-.0004	-.0144*	-.0140*	-.0131*	-.0127*	-.0122*	-.0018*
Years of education	.0365*	.035*	.063*	.065*	.034*	.033*	.079*	.078*	.062*	.060*
South*	-.153*	-.155*	-.156*	-.157*	-.273*	-.274*	-.196*	-.198*	-.007	-.014
Midwest	-.094	-.090	-.233*	-.231*	-.142*	-.135*	-.095	-.089	.067	.077
Urban-rural	.036	.036	.118*	.118*	.140*	.141*	.027	.029	.054	.055
Catholic*	-.010	-.012	-.313*	-.314*	.007	.078	.019	.019	-.005	-.004
Baptist & sects	-.261*	-.260*	-.268*	-.267*	-.144*	-.140*	-.118*	-.117*	-.056	-.051
Jewish	.425*	.415*	.079	.069	.591*	.583*	.288*	.280	.160	.166
None/other religion	.227	.231	-.116	-.117	.080	.083	.118	.116	.150	.144
Religious attendance	-.032*	-.032*	-.109*	-.108*	-.117*	-.116*	-.032*	-.032*	-.046*	-.045*
White*	-.519*	-.519*	.141*	.144*	-.110*	-.110*	-.185*	-.186*	-.141	-.145*
Widowed*	.168	.156	-.070	-.074	.069	.061	.109	.105	.066	.060
Divorced	.248	.244	.177*	.171*	.365*	.355*	-.011	-.015	.339*	.327*
Never married	.154	.145	-.025	-.032	.077	.070	.019	.018	-.020	-.027
No. of children	.0082	.0083	-.0366*	-.0364*	-.0099	-.0093	.0018	.0030	.0080	.0107
No. of children × div	-.0027	-.0036	-.0067	-.006	-.0057*	-.0547*	.0385	.0381	-.0684*	-.0673*
In labor force*	.089	-.003	.156*	.088	.111	.009	.325*	.254*	.335*	.211*
Not in labor force	.119	.118	.081	.081	.024	.026	.257*	.258*	.061	.064
No. of hours worked	-.00080	-.00099	-.00038	-.00048	.00053	.00044	.00450	.00458*	.00665*	.00664*
Prop. family income	-.0165	-.0043	-.0641	-.0588	-.0046	.0081	.0263	.0276	-.0288	-.0254
Work if rich		.136		.107*		.168*		.125*		.222*
R ²	.121	.123	.265	.267	.364	.368	.247	.249	.283	.289
Net R ² : Control variables		.087*		.193*		.228*		.133*		.134*
Net R ² : Family variables		.007*		.008*		.008*		.002*		.006*
Net R ² : Worklife variables		.003*		.003*		.005*		.011*		.024*

* Omitted categories are non-Midwest or non-South, mainline Protestants, nonwhites, currently married, and never worked, respectively.

* $p < .05$.

only one where the number of hours worked could be argued to create an immediate short-term interest in nontraditional ideology. Women working full time may find it impossible to live up to traditional expectations regarding their domestic responsibilities, while women who work fewer hours may want to justify the time they spend in domestic activities. Thus, the net effect of hours worked on this variable may well derive from women's interests. The extent of labor-force involvement, however, does not seem to translate into general support for feminism. Similarly, the proportion of family income contributed by the woman seems to have no impact in any of the five equations.

Model 2 includes the measure of subjective commitment to work, testing Hypothesis 3. Four of five equations show that, net of all else, women who would continue to work are significantly more supportive of feminist positions than women who would not, on average by about a sixth of a standard deviation unit. In each of these four cases, the effect of labor-force participation *per se* declines after controlling for the effects of subjective commitment. Labor-force participation, however, still has a modest effect in most cases; this indicates that commitment to work does not mediate all of the effects of labor-force participation.

The work-life variables as a set, however, do not explain a large portion of the variance either. In only two equations does the net contribution exceed two percent. In comparison with the background variables, the work and family-life measures account for very little of the variance in any of the dependent variables. Apparently, education, religion, and other traditional sources of political cleavage play the far greater role in influencing women's opinions regarding feminist goals.

Thus, Gerson's assertion, restated as Hypothesis 4, clearly is not supported. But is there any evidence to suggest a trend of

increasing importance of work and family factors? To assess the possibility, I re-estimated Model 2 separately for each year. I then calculated the net contribution of the background variables and looked for evidence of a systematic decline in their relative explanatory power. The trend in explanatory power of the control variables is described in Table 2. In the case of the two explicitly political variables, there was no discernible shift. In the other three cases, however, there were small declines in the relative importance of the background variables and corresponding increases in the importance of the work and family-life variables between 1977 and 1985.

DISCUSSION: CLEAVAGE VS. SOCIALIZATION

In recent years, several writers have advanced theories that attempt to account for the deep divisions among American women concerning issues frequently described as "family politics." These theories have located the *source* of these divisions in differences in family and work life. The preceding analyses, using a representative sample of American women, constitute the first systematic assessment of these theories. The analyses used five dependent variables, which ranged from the explicitly political to more general norms and expectations. Although there was consistent evidence that family life, work status, and commitment to work *do* influence women's attitudes, the effects were typically small.

It would be tempting to attribute the contrary evidence presented in previous studies to their small, unrepresentative samples. I propose a different explanation for the discrepancy that has important implications for theory construction, observation, and theory revision. *Perhaps the wide divisions observed by Luker and Gerson are real, but their political consequences small.* At the heart of this claim is the distinction between

Table 2. Net R^2 Contribution of Background Variables as Proportion of Total Variance Explained, by Dependent Variable and Year

Year	E.R.A.	Abortion Approval	Sexual Morality	Gender Roles	Family Responsibility
1977	.70	.69	.72	.55	.50
1980		.67			
1982	.70	.58	.59	.52	
1984		.75			
1985		.71	.52	.47	.27

observed (zero-order) associations and net effects. Luker and Gerson observed deep political divisions associated with differences in lifestyle and advanced explanations that attempted to account for the former in terms of the latter. Data collected by the use of in-depth interviews do not permit controlling for the effects of other correlated factors and, as a result, such analyses are always susceptible to spurious interpretation.

There is no way to ascertain if Gerson and Luker observed associations caused by spurious factors in their research. It is possible, however, to gauge the magnitude of the spurious associations in the GSS. I can compare the magnitudes of the *net effects* of the family and work-life variables with the *observed* political cleavages associated with them.

One way to make this comparison is by using two ideal typical women, one predicted to be strongly feminist and one traditional. For each dependent variable, I calculated the difference in predicted score between (1) a married woman with three children who has never worked, and (2) a divorced woman who is in the labor force and has no children. The difference in predicted score, based on Model 2, is reported in the first column in Table 3. Keeping in mind that all of the dependent variables have a standard deviation of one, the table shows that the effects of these variables range from about a third to three-quarters of a standard deviation. Thus, *with all other variables held constant*, these two ideal typical women are expected to be half a deviation apart in their support of feminist positions. Because of statistical control, this difference can be solely attributed to the effects of the family and work variables.

Table 3. Comparison of Adult Socialization (net) Effects with Zero-order Observed Differences for Each Dependent Variable

Dependent Variable	Net Effects	Observed Differences
Equal Rights Amendment	.374	.780
Abortion approval	.475	.792
Sexual morality	.560	1.374
Gender roles	.355	.747
Family responsibilities	.728	1.135
Mean	.498	.966

Note: Comparison is based on two ideal typical groups: (1) married women with three children and who have never worked and (2) divorced women with no children, working full time and who would work if rich.

To estimate the zero-order effects, I calculated the means of the five dependent variables for each group of women, and the differences are reported in the second column of Table 3. It is evident that the observed cleavages are about twice as large as the net effects. This supports the possibility that the group differences observed in previous studies are real and sizable, although the *socialization effects* of adult work and family life are relatively small.

Another way to illustrate this is by a decomposition of variance. The total effect of the work and family-life variables can be calculated as the squared multiple correlation (R^2) from the regression of each dependent variable on the work and family variables. This can then be decomposed into variance that these variables explain after the effects of the background variables have been partialled out of the dependent variable (net effects) and the remainder, which is the proportion that is spurious due to the background factors. This decomposition is reported in Table 4. It confirms the conclusion that the *net* effect of the work and family variables is quite small in comparison with the *gross* squared multiple correlation. On average, more than eighty percent of the zero-order explanatory power of these variables can be attributed to the spurious effects of the background factors.

CONCLUSIONS

Klein argued that women undergo gradual socialization while in the labor force, increasing their openness to feminist ideology. Though the signs of the effects are generally in the direction predicted by Klein, they are consistently small. Mere presence in the labor force had a substantial liberalizing effect: only for the two scales concerned with women's roles and responsibilities.

Gerson argued that women's family lifestyles and their subjective commitments are important factors contributing to women's gender-role attitudes and support of feminist positions in general. The analysis suggests that these factors have consistent but small effects on women's support of feminist positions.

For the most part, however, women's attitudes across the range of issues explored were primarily influenced by the more traditional variables of political sociology: education, religion, race, age, and place of

Table 4. Decomposition of Variance Explained by Work and Family Variables for Each Dependent Variable

Dependent Variable	R ² from Work and Family Variables (Total or Gross Explanation)	R ² from Work and Family Variables Net of Background Factors	Net R ² as Percentage of Total R ²
Equal Rights Amendment	.036	.011	30.9%
Abortion approval	.074	.011	15.6
Sexual morality	.140	.016	11.1
Gender roles	.115	.015	13.1
Family responsibilities	.155	.034	21.7

residence. There is some tentative evidence that the influence of the work and family variables is increasing. Should this trend be replicated in future research, Gerson's prediction that work and family circumstance represent "emerging lines of political cleavage" could turn out to be true.

This research not only evaluated some recently proposed theories, but it also provides clear support for the notion that research using different methods of data collection and analysis should be complementary. In this case, two important studies based on in-depth interviews and small samples suggested a previously unknown source of political socialization. This large sample analysis confirmed the existence of these effects but also provided a needed qualification regarding their current prominence.

Observed lines of political cleavage are important but should not be confused with causes of political attitudes and commitments. The former may be useful in describing the landscape of social and political change, suggest target groups for political players to focus on, and provide a basis for symbolic politics more generally. Their importance as agents of political socialization, however, must be systematically assessed with simultaneous consideration of rival explanations.

APPENDIX: DEPENDENT VARIABLES

Equal Rights Amendment (1977 and 1982 only)

Have you heard or read about the Equal Rights Amendment? If "yes":

Do you strongly favor, somewhat favor, somewhat oppose, or strongly oppose this amendment?

Approval of legal abortion Alpha = .87

Please tell me whether or not you think it should be possible for a pregnant woman to obtain a legal abortion if . . .

A. If there is a strong chance of a serious defect in the baby?

B. If she is married and does not want any more children?

C. If the woman's own health is seriously endangered by the pregnancy?

D. If the family has a very low income and cannot afford any more children?

E. If she became pregnant as a result of rape?

F. If she is not married and does not want to marry the man?

G. If the woman wants it for any reason?

Sexual morality (1977, 1982, and 1985 only)
Alpha = .61

There's been a lot of discussion about the way morals and attitudes about sex are changing in this country.

A. If a man and a woman have sex relations before marriage, do you think it is always wrong, almost always wrong, wrong only sometimes, or not wrong at all?

B. What about sexual relations between two adults of the same sex—do you think it is always wrong, almost always wrong, wrong only sometimes, or not wrong at all?

Gender roles (1977, 1982, and 1985 only) Alpha = .73

A. Do you agree or disagree with this statement? Women should take care of running their homes and leave running the country to men.

C. If your party nominated a woman for President, would you vote for her if she were qualified for the job?

D. Tell me if you agree or disagree with this statement: Most men are better suited emotionally for politics than are most women.

Family responsibilities (1977 and 1985 only)
Alpha = .79

Now I'm going to read several more statements. As I read each one, please tell me whether you strongly agree, agree, disagree, or strongly disagree with it. For example, here is the statement:

A. A working mother can establish just as warm and secure relationship with her children as a mother who does not work.

B. It is more important for a wife to help her husband's career than to have one herself.

C. A preschool child is likely to suffer if his or her mother works.

D. It is much better for everyone involved if the man is the achiever outside the home and the woman takes care of the home and family.

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THE SOCIAL STRUCTURAL DETERMINANTS OF ETHNIC GROUP BEHAVIOR: SINGLE ANCESTRY RATES AMONG FOUR WHITE AMERICAN ETHNIC GROUPS*

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We criticize traditional ethnicity research for treating indicators of observed ethnic behavior as reflections of cultural values. Other researchers who argue that behavior is the result of structural opportunity suggest an alternative approach to ethnicity but may underestimate the potential importance of culture. We propose a general parsimonious model of ethnic behavior that describes group behavior as constrained by three aspects of social structure—demographic opportunity, economic opportunity, and cultural heritage. A simple illustration of a method guided by this structural model is presented through the comparison of single ancestry rates for four white American ethnic groups (Italian, Polish, Slovak, Hungarian). We conclude that there are no differences in single ancestry rates between three of the four groups after structural opportunity has been controlled. Only the Slovaks demonstrate differences in single ancestry rates, after demographic and economic opportunity have been controlled. We suggest that those differences are the product of either historically unique demographic and political-economic experience not detected in our models or some unique cultural heritage or a combination of the two.

The sociological literature on ethnicity in America has been, by and large, concerned with the cultural or value differences between groups (e.g., Kessler-Harris and Yans-McLaughlin 1978; Petersen 1971; Caudill and DeVos 1956; Glazer and Moynihan 1970; Lewis 1968; Banfield 1974; Covello 1967; Bodnar 1976; and Schooler 1976.) Recently, ethnicity research has tended to elevate political-economic and demographic-ecological explanations above the cultural value-based explanations of observed ethnic group behavior.¹ This mirrors a general change in

focus in much sociological work away from an emphasis on individual motivation and values as explanations for behavior and toward one that examines structural constraints on the opportunities individuals (and their groups) confront.

ETHNIC POLITICAL ECONOMY

Economic opportunity, both current and historical, will affect group settlement patterns and geographic and economic mobility for ethnic groups regardless of their cultural heritage. Steinberg (1981) argues that Jewish economic success and educational achievement in the twentieth century United States can be explained in terms of the group's pre- and postimmigration economic opportunity. Jewish immigrants with European experiences in manufacturing, particularly in apparel production, arrived in the U.S. just as this industry was rapidly expanding. This economic opportunity afforded the resources for mobility, including the resources for educational investment. A similar argument has been made for the experience of black Americans (Steinberg 1981). The contraction and automation of southern small-scale agriculture in the mid-20th century pushed blacks into the cities, particularly older northern

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¹ Many ethnographers have included discussions of the economic context into which specific ethnic groups arrived, but few have used this or their present economic context as explanations for contemporary ethnic group behavior.

cities, just as the demand for unskilled (or improperly skilled) labor in manufacturing was drying up. Thus, the lack of economic opportunity when it was needed deprived blacks, as a group, of mobility. We can think of the Jewish and black labor market background prior to immigration and emigration in conjunction with the economic opportunity available to the new migrants as important determinants of observed economic mobility.

In addition, demographic forces can influence economic opportunity by changing interethnic relationships. Lieberman's (1980) discussion of black economic opportunity in the North highlights the role of increased black population stimulating latent white racism as blacks became significant labor market threats to whites. Relative group size also explains why the similarity of initial racism expressed toward blacks and Asians was replaced with a more benign attitude toward Asians and increased hostility toward blacks. Political-economic explanations of ethnic- or race-based stratification are available for a variety of countries and ethnic groups (e.g., Bonacich 1980; Steinberg 1981; Semyanov and Tyree 1981; Spillerman and Habib 1976; Blauner 1972).

A speculative example of the economic structural determinants of group behavior and cultural adaptation can be made for non-Polish Eastern Europeans. Greeley (1977, p. 63) reports that these groups, which include Slovaks, Hungarians, Ruthenians, Romanians, and Yugoslavs, have achieved relatively low educational and occupational status in the United States but tend to have relatively high incomes. Although Greeley doesn't suggest it, a reasonable explanation might be that these ethnic groups, who are geographically concentrated in the industrial Northeast and Midwest, have found employment in the relatively high-wage unionized sector (Hutchinson 1956). High educational and occupational status would be less likely to be established as "group" behaviors or values given the fairly high economic opportunity in terms of income available for members of these labor markets. In addition, because union jobs tend to reward geographic stability rather than mobility (Edwards 1979), the maintenance of ethnic culture may be the indirect result of economic opportunity rather than cultural values. Following Yancey et al. (1976) and Taylor (1979) we might speculate

that common community and occupational structure is conducive to the "crystallization" of an ethnic group. Alba and Golden's (1986) finding that non-Polish Eastern Europeans have unusually high in-marriage rates supports this interpretation.

Spillerman and Habib (1976), in their study of ethnic inequality in Israeli communities, found that ethnic group differences in economic stratification were largely the result of settlement patterns. They go on to suggest that the omission of industry and community characteristics in status attainment research has probably biased estimates of ethnic effects (e.g., Duncan and Featherman 1972). Thus, some group differences, commonly attributed to cultural background or motivational differences among the (ethnic) groups are likely to be the product of different economic opportunity based on settlement patterns. A U.S. example would be the contrasting experiences of Irish immigration to Boston and Philadelphia. The Irish going to Philadelphia arrived in a growing, expanding city and experienced a great deal of upward mobility. Those Irish who went to Boston found themselves in a mature city that did not undergo rapid economic development, and, consequently, they remained largely confined to the working class (Geschwender 1987). Different levels of economic opportunity, not different cultural predispositions, account for the mobility experience in this example.

DEMOGRAPHIC-ECOLOGICAL CONSTRAINTS

Other researchers have stressed the demographic-ecological constraints and contributions to ethnic group behavior. Blau (1977) and Blau et al. (1982) argue that behavior is constrained by opportunity and that in the specific case of ethnic group endogamy, the rate of endogamy will be a function of the availability of mates from within the group as well as some residual cultural preference. Thus each ethnic group's observed in-marriage patterns should be a function of both the size of the group and the salience of group membership. Similarly, visiting patterns among relatives that vary by ethnic group membership, another indicator of the salience of group membership, may be conditioned more by distance (i.e., settlement patterns) than by group preference (Klatsky 1974). Some ethnic groups may be more

concentrated geographically and so have easier access to other group members and thus exhibit higher interaction rates. A number of other studies have documented the structural effect of group size on endogamy rates for race, religion, and class (Bealer et al. 1963; Locke et al. 1957; Barnett 1962; Heer 1962, 1966; Centers 1949; Hollingshead 1950). Similarly, ethnic patronage of certain types of ethnic stores may be conditioned by ethnic concentration and distance to stores (Aldrich et al. 1985). In each of these three examples, demographic/ecological constraints affect the rate of ingroup interaction.

There are two general implications of these political-economic and demographic-ecological analyses. The first is that observed differences in behavior between ethnic groups should not be interpreted as necessarily a reflection of group values or group culture. Rather, members of ethnic groups have different opportunities to interact with other members of the group as a function of settlement patterns and dominant group reaction. In addition, settlement patterns determine the economic opportunities available to group members as well as dominant's reactions to the group, and that economic structure can in turn influence future migration patterns. The second implication is that ethnicity as culturally determined action can have enduring (e.g., Blau 1977; Klatsky 1974; Aldrich et al. 1985) or even emergent (e.g. Taylor 1979; Yancey et al. 1976; Lieberman 1985; Portes 1984) effects after economic and demographic opportunity has been accounted for. The discussions of emergent ethnicity (e.g. Portes 1984; Yancey et al. 1976) suggest, however, that often cultural effects are the product of recent political-economic and demographic experience rather than of more long-standing group values.

The next section of this paper states and sets out a simple parsimonious theory for understanding observed ethnic group behavior. This theory stresses demographic-ecological and political-economic constraints on ethnic group behavior but includes room for cultural explanations.

ETHNIC BEHAVIOR AND STRUCTURAL OPPORTUNITY

While we are not ready to dismiss culture as a determinant of ethnic group behavior, we

approach this concept with some suspicion. All too often action has been assumed by many social scientists to reflect values, beliefs, or other voluntaristic aspects of culture. We are skeptical of this narrow approach not only because it leads to the unrealistic praise of "successful" groups and condemnation of the "less successful," but also because it distracts from the study of structural forces that limit the range of possible behaviors. It is too easy to ascribe group differences in behavior to group differences in values while ignoring the very real structural limits on behavior. Ethnic behavior as a sociologically informed concept denotes the typical patterns of action in a given situation within the limitations set by structural opportunity and derived from the past experiences of an ethnic group.

Because group behaviors are only partially cultural in origin, the use of observed ethnic behavior to measure ethnic culture can be misleading. In a sense, ethnic behavior derived from cultural heritage or tradition is observed when groups with the same economic and demographic opportunity structure exhibit different typical behaviors. Differences in observed ethnic behavior under these circumstances may be treated as cultural differences between groups.

The theoretical argument can be formally summarized as follows:

Observed variation in behavior across ethnic groups is a function of three social structural constraints. These constraints on observed behavior are the demographic-ecological opportunity of group members to interact within the group, the political-economic environments in which the ethnic group is located, and cultural differences in the probability of choosing the observed behavior. Cultural differences in probabilities of choosing behaviors will tend to respond more or less quickly to the demographic-ecological and political-economic opportunity structures in which the group is embedded. In this sense, ethnicity, as culturally derived group behavior patterns, is emergent rather than primordial (Shils 1957; Geertz 1963).

Our argument suggests that observed ethnic endogamy or mobility rates are *not* accurate measures of relative assimilation, either social assimilation (adopting host cultural values) or structural assimilation (expansion of the primary group) (Gordon 1964). Instead, they are indicators of structural constraints and opportunities *as well as* ethnic behavior;

therefore, it is only those observed behaviors, with demographic and economic opportunity held constant, that can be indicators of group cultural differences. In addition, that cultural component, because it is formed in near-history by the opportunities available and pursued by an ethnic group (Lieberson 1985), is not simply an indicator of premigration values or heritage but is also the product of structural history within the host country, region, or ghetto. If present ethnic group behavior differs from group to group and that difference is net of demographic and economic opportunity, it is not necessary to conclude that preimmigration values are "causal." Rather, as Yancey et al. (1976) and Taylor (1979) point out, those cultural differences are "emergent" through the historical experience of the group in the host country.

ILLUSTRATION

In this paper, we examine one common measure of ethnicity, single ancestry rates, and utilize the structural theory outlined above to guide our method and explanation. We hypothesize that single ancestry rates will be highly influenced by structural opportunity, i.e., by the density of a specific group within a given population. In addition, some cultural derived preference for in-marriage and ethnic identity may exist. This is a deliberately simple example of research informed by the structural approach to ethnic behavior outlined above. Current research is more likely to proceed from either a demographic, political-economic, or cultural perspective (see Lieberson [1980] for an exception). The empirical illustration here demonstrates how a relatively simple research design can take into account the sensitivity to all three factors implied by the discussion in this paper.

In an attempt to distinguish between the effects of structure and culture, we will utilize a comparative method, studying the in-marriage rates of four white American ethnic groups: Hungarians, Italians, Poles, and Slovaks. These four groups were chosen in order to hold time of arrival (and generation in the U.S.) constant. The similar preimmigration class background, immigration patterns, and postimmigration class composition of these groups support an assumption that they may have shared a similar history of

economic and demographic opportunity.² The implication for our theoretical model is that group selection will act as a physical control for the impacts of time of immigration and premigration labor market experience that is not uniquely cultural, upon current ethnic behavior.

Using state-level data from the 1980 census (U.S. Department of Commerce 1983), single-ancestry rates for the four ethnic groups (conceptually similar to ingroup marriage rates) are derived from the proportion of respondents identifying ethnic ancestry who claim a single ethnic ancestry. Thus, it is an approximate measure of ingroup marriage in the last generation and of the intensity of current ethnic identification.³ We hypothesize that there is an expected random single ancestry rate for each ethnic group per state, defined by the relative size of each ethnic group to state population. Conceptually, the

² Glaser and Straus (1967) refer to this as theoretical sampling, i.e., letting your theory guide your decision as to which groups to compare. Too few ethnicity researchers have used this comparative method, and when they have, they have compared disparate groups (e.g., Greeley and McCreedy 1974; Alba and Golden 1986). By using groups with similar class backgrounds upon immigration we minimize the likelihood that the groups varied in their background capacity to adapt to the U.S. economy. Because they all immigrated at the same time, any generational effect on ancestry memory or ethnic identification (Lieberson 1985) is minimized as well.

³ We realize that ancestry responses, even the unusually good ones used in the U.S. Census of Population, are not simple measures of blood stock. The actual question that the 1980 Census used was, "What is the person's ancestry?" Instructions advised the respondent that ancestry referred to the group, lineage, or country with which the person identifies. Multiple ancestries were acceptable responses. The question and subsequent analysis does not use information on race to infer ancestry. Answers to this question reflect ethnic ancestry in the old country, nation of origin, self-identification and other identification (Lieberson 1985). While these effects are not separable, we also do not see them as problematic. In our perspective, ethnicity and associated ancestry perception are constantly changing as a result of current experience. As Lieberson says, "Ethnic origin . . . is both a status and a process" (p. 160). As such, reported ethnic ancestry is likely to resemble more closely current ethnic identification than the often complex ancestral kinship of many white Americans.

actual single ancestry rate for each group, minus the structurally expected single ancestry rate (given the relative group size), yields a primitive measure of ethnic cultural propensity for single ancestry identification (C). Practically in a regression equation, $Y = b_0 + b_1D + e'$, $b_0 = C$. It is hypothesized that ethnic density, D, (structural opportunity for single ancestry) will explain a great deal of the variation in state single ancestry rates (Y). If this is so, then uncorrected rates are not reliable measures of relative assimilation or ethnic culture differences between groups. Instead, the residual single ancestry rate (C) should be a better indicator of the impact of ethnic group membership upon the choice of marriage partner. There may be, of course, a cumulative effect of ingroup marriage in particular on ethnic identity and ethnic behavior. Ethnic ingroup marriage, while structurally determined, may result in a strengthening of ethnic identification and other aspects of ethnic culture among group members. Thus larger groups, groups with more opportunity for endogamy, may exhibit higher ethnic preference rates because of this feedback process of ethnic crystallization (Lieberson 1985).

Economic history, or the labor market forces that contributed to group cohesion, transformation, or assimilation are controlled in this study indirectly through the choice of ethnic groups. The four groups studied were selected for their similarities in era of immigration and occupational background upon immigration. Table 1 shows that almost identical proportions of each group were unskilled laborers or peasants in background. Italians were slightly more represented in the skilled manual occupations. The Poles were more represented in the miscellaneous category, largely because of higher rates of single female immigration. Unfortunately, data on

Table 1. Occupations Upon Immigration of Four Immigrant Groups Reporting Prior Employment, 1899-1910

Group	Professional	Skilled	Laborers	
			Inc.	Misc.
Italian	0.4%	14.6%	77.9%	7.9%
Hungarian (Magyar)	0.5	8.6	77.5	13.4
Polish	0.2	6.3	75.3	18.1
Slovak	0.1	4.4	80.0	15.5

Source: Sowell 1978, p. 117.

Table 2. Percentages of Total Immigration for Group, 1860-1950

	Italy	Austria/Hungary
1861-70	0.3	0.2
1871-80	1.3	1.8
1881-90	6.5	8.5
1891-1900	13.7	14.2
1901-10	43.0	51.5
1911-20	23.3	21.5
1921-30	9.5	1.5
1931-40	1.4	0.4
1941-50	1.2	0.7
Total	4,751,000	4,164,000

Source: Thernstrom 1980, p. 480.

time of immigration is available categorized by nation of origin, rather than ethnic origin (see Table 2). Three groups—Poles, Slovaks, and Hungarians—immigrated from within the Austria-Hungarian empire and so cannot be distinguished. There is no evidence that we are aware of, however, that suggests that these three groups immigrated at different times. Comparing Italian and Austria-Hungarian immigration to the U.S., it is apparent that the patterns of immigration are very similar. Both groups peaked in the 1900-10 period and experienced over 80 percent of their immigration between 1891 and 1920.⁴

From the data presented in Tables 1 and 2 it seems reasonable to conclude that all four groups had roughly similar occupational backgrounds and arrived together. Therefore, it is reasonable to conclude that they had similar opportunity structures to confront upon arrival in the United States. In addition, because all four groups were predominantly Catholic and did not speak English, they should have been greeted with similar levels

⁴ The data available for this analysis (U.S. Department of Commerce 1983) does not differentiate between native and foreign-born respondents. It would probably be preferable to compute the single ancestry rate for the native born only. The Italians, Poles, and Slovaks have a nearly identical proportion of native born (90, 92 and 92 percent, respectively), so we are confident that this will not bias those comparisons. The Hungarian proportion of native born is lower (81 percent) due to a more recent small immigration. If this was to affect the outcome of the analysis, we would expect a higher than expected residual single ancestry rate (C) for Hungarians. This is not the case (see Table 5), so we feel safe including the Hungarians in the analysis.

Table 3. Four Ethnic Groups; Single Ancestry, Total Population and Single Ancestry Rate, 1980

	Single Ancestry	Population	Single Ancestry Rate*
Hungarian	727,223	1,776,902	40.9
Italian	6,883,320	12,183,692	56.5
Polish	3,805,740	8,228,037	46.3
Slovaks	361,384	776,806	46.5

* Two-tailed T-tests show that for all four groups state-level single ancestry rates are significantly different from each other. The Slovak-Pole rates are significantly different at a probability of .05; the Slovak-Italian at the .01 probability; and all of the other relationships at probabilities of .001 or below.

of discrimination on arrival.⁵ The relatively large size of the Italian and Polish populations suggests that these groups may have had superior group resources for the creation of enclave economies and ethnic ghettos that might foster the crystallization of ethnicity, resistance to discrimination, and the ability to marry within the group (Lieberson 1985).

Culture and Single Ancestry Rates

Table 3 reports the total U.S. population size for each of the four ethnic groups in this study in 1980, the number of respondents within that population who claimed only a single ancestry, and the national single ancestry rate for each ethnic group. The data in Table 3 provide information on a traditional measure of ethnic culture as well as relative group size. We can see that the Italians were the largest ancestry group at over 12 million Americans in 1980 and that this group also had the highest single ancestry rate, at 56.5 percent, of all people claiming Italian descent. The Polish were the second largest group, with 8 million Americans claiming Polish ancestry. The Polish single ancestry

rate was a full 10 percent lower than the Italian at 46.3 percent. The Hungarian-American population was 1.7 million in 1980, with the lowest single ancestry rate of the four groups at 40.9 percent. Slovak-Americans numbered fewer than a million (776,806) but had a single ancestry rate (46.5 percent) a little higher than the Poles, although still quite a bit lower than the Italians.

A simple ethnic culture model might interpret Table 3 as showing high Italian ingroup preference, similar Polish and Slovak ingroup preference, and low Hungarian ingroup preference. Thus, the Italian culture has had more, and the Hungarian less, staying power in the United States than the Polish and Slovak cultures. We, of course, disagree. Our interpretation of this data is that in general, larger groups have higher opportunity and so higher rates of ingroup marriage (see similar analyses using *national* group size data by Alba and Golden 1986; and Stevens and Swicegood 1987). The Slovaks seem to be an exception in that they have a relatively large single ancestry rate and low population numbers. The national demographic patterns, however, may obscure local opportunity patterns. In order to examine the effects of culture versus demographic opportunity, we examine the local (i.e., state-level) covariation of opportunity and single ancestry rates.⁶

⁵ While all four groups are predominantly Catholic, they do vary in their religious composition. There is no direct data on the religious composition of any ethnic groups available from the U.S. Census. Current religious affiliation was estimated by combining the General Social Survey responses for the 1972-84 period. In these data 13 percent of Hungarian ancestry and 11 percent of Polish ancestry list their religion as Jewish. The comparable figure is one percent for Italians and Slovaks. In all four cases, Jews are a small minority, and we do not think that the religious composition of the groups overly threatens our theoretical sampling strategy.

⁶ While state-level data is clearly better than national-level data, state is still a fairly aggregate level of analysis. The use of this level of aggregation represents, however, a more conservative test of our theory than would city or neighborhood data, because it is actually on the local level that people seek mates and ethnic communities are formed. Thus, all of the measurement error, if any, introduced by using state-level data is in the measure of relative population size (the independent variable in the analysis to follow). This should depress explained variance. It should not bias estimates of group differences unless measurement error would vary systematically across the four groups. If this is the case, then we would expect the regression coefficients to be larger for smaller groups who are likely to be found less evenly distributed across states than numerically larger groups. Since measurement error would be larger in the predictor variable and relatively smaller in the dependent variable, this should inflate the estimates of the efficiency with which small groups convert population into single ancestry. This is not the case (see Table 5), so we

Table 4. Relative Ethnic Group Size and Single Ancestry Rates, for the Fifty U.S. States and the District of Columbia, 1980

Ethnic Group	Mean Single Ancestry Rate (1)	Mean Percent of State Population (2)	Pearson Correlation (1) (2)	Mean Log Percent State Pop + 1 (3)	Pearson Correlation (1) (3)
Hungarians	36.4	1.54	.39**	0.389	.39**
Italians	45.6	5.09	.82****	1.354	.79****
Polish	40.2	3.77	.62****	1.333	.61****
Slovaks	42.5	1.19	.25ns	0.287	.28*

Significant at * .05 probability.
 ** .01 probability.
 **** .0001 probability.

Table 3 also reports two-tailed t-tests for group differences in single ancestry rates calculated for the four ethnic groups using the state level data ($n=51$). The results of the t-tests showed that each group's single ancestry rate was significantly different from the other group's rates. All of the relationships were significantly different at the .001 or below probability except the Slovak-Italian ($p=.01$) and Slovak-Pole ($p=.05$). Thus, before controlling for structural opportunity, the four groups are statistically different from each other on this indicator.

Opportunity and Single Ancestry Rates

Table 4 reports for our four groups the mean state single ancestry rates, the mean percent of state population, and the Pearson correlation and its significance level between the two. We find high and significant correlations between single ancestry rates and proportion of state population for both the Italian and Polish groups. The Slovak and Hungarian correlations are lower.⁷ Table 5, Panel A, reports the WLS regression of single ancestry rates upon the log of relative group size.⁸ The log transformation was performed on all four groups for comparability and does not alter the findings in any way. We can see that the slopes (b_1) of the regression lines are

all positive and range from a low of 5.5 for Poles to a high of 8.9 for Italians and are all significant, at least at the .001 probability. The intercepts (b_0), which can be interpreted as a primitive measure of ethnic culture, are clustered around 35 percent for the Hungarian, Italian, and Polish ethnic groups and is much higher at 43 percent for the Slovak group.

Table 5, Panel B, reports the results of a series of two-tailed probability tests for difference in the regression slopes and intercepts. None of the slopes are significantly different from each other. We find that the Slovak corrected single ancestry rate of 43.3 is significantly higher than the rates of the other three groups. Equally interesting, the Italian, Polish, and Hungarian single ancestry rates are practically identical once demographic opportunity has been controlled. In terms of ethnic differences, the data suggests that when ethnic behavior is measured in single ancestry rates and structural history and current demographic opportunity are controlled, three of the four groups are identical and that only Slovaks may have a significantly higher cultural allegiance.

DISCUSSION

The data show that for Italian and Polish-Americans, single ancestry rates are highly influenced by structural opportunity with coefficients of explanation of .90 and .83, respectively. For Hungarians, also, their low rate of single ancestry is mostly explained by structural opportunity ($R^2=.58$), i.e., by the fact that there are relatively few Hungarians around with whom to marry. The results for Slovaks are consistent, although only modest variation in single ancestry rates has been accounted for ($R^2=.17$). These results would

are fairly confident that the state-level analysis is not misleading.

⁷ A log transformation of the Slovak group size variable was necessary because of a skewed distribution.

⁸ Weighted least squares corrects for heteroscedasticity introduced by the wide range of sample sizes across states for the group estimates of single ancestry rates and relative population size. See Blau et al. (1982) for an identical statistical solution to the heteroscedasticity problem.

Table 5. Weighted Least Squares Regression. Log Relative Group Size and Single Ancestry Rate ($N=51$)

Panel A	Hungarians	Italians	Poles	Slovaks
Log Size (b_1)	7.8	8.9	5.5	6.8
T (b_1)	8.4	21.0	15.4	3.4
Sig T (b_1)	.0001	.0001	.0001	.001
Intercept (b_0)	34.7	34.8	35.6	43.3
T (b_0)	78.1	47.5	67.5	89.3
Sig T (b_0)	.0001	.0001	.0001	.0001
Multiple R	.77	.95	.91	.44
Adjusted R^2	.58	.90	.83	.17

Panel B Group Differences in Regression Slope (b_1) and Cultural Intercept (b_0), two-tailed .05 probability

	Hung. vs. Ital.	Hung. vs. Poles	Hung. vs. Slovak	Ital. vs. Poles	Ital. vs. Slovak	Poles vs. Slovak
b_1	NSig	NSig	NSig	NSig	NSig	NSig
b_0	NSig	NSig	Sig	NSig	Sig	Sig

seem to support our hypothesis that out-group marriage and single ancestry are less determined by cultural heritage than by structural opportunity or the size and spatial distribution of the specific ethnic population. In other words, we would argue that the Hungarians, with their relatively low overall single ancestry rate, are not 'culturally' different from the Italians (at least for this indicator), who have a very high opportunity-determined single ancestry rate. These findings are inconsistent with the logic of Lieberman's (1985) prediction that larger groups will have higher levels of ethnic identification. There is no evidence here that larger groups (the Italians and Poles) have higher levels of single ancestry as a result of stronger ethnic identities.

With their high single ancestry rate, the Slovaks would seem to be the only group with a cultural roadmap that is likely to lead members to report single ancestry.⁹ How does this finding compare with other information about Slovaks? The Slovaks are the most highly concentrated geographically of the four groups, with 56.2 percent living in just two states, Pennsylvania and Ohio. This indicates a low rate of geographical mobility that, if it produces high-density Slovak communities in these two states, will not only increase the opportunity for ingroup marriage but perhaps

in Yancey et al.'s (1976) terms be conducive to the "crystallization" of culture identification. Stevens and Swicegood (1987) suggest that ethnic endogamy may be enhanced by this type of ethnic geographical segregation. The role of nationalism in Slovak ethnic identity may be important as well. Unlike the other three groups, the Slovaks have not had a country in Europe that was distinctively Slovak (except under the German occupation during WW II). Persecution of Slovaks by the Magyars (in the Austro-Hungarian empire) and later conflicts with the Czechs (in Czechoslovakia) led to nationalist themes during the immigration period that were used to foster ethnic solidarity in the United States (Stolarik 1980). This nationalist consciousness may have led to higher levels of ethnic identity among Slovaks than among other groups with similar pre- and postimmigration experience.¹⁰

⁹ The design does not allow us to rule out the possibility that the other three groups, although identical in their cultural preference, are not different from groups not in this analysis nor that Slovaks are similar to excluded groups.

¹⁰ This nationalist explanation reminds us of other examples of national persecution in country of origin helping to sustain ethnic identity in the United States. The long relationship between Irish ethnicity and the fate of Ireland, first in terms of independence in the south and later over control of Northern Ireland, is a well-known example. It is our observation that Polish ethnic identity saw a resurgence in the early 1980s in response to the successes and repression of the Solidarity union movement in Poland. Lieberman (1985) gives an example, however, of how when nationalist activity in the country of origin threatens "other identification" in the present country, then it may lead to a fairly quick erosion of ethnic identity (e.g., Germans in Canada during World War II).

In future research the question as to whether Slovaks are culturally different from comparable ethnic groups, as measured by such indicators as ingroup marriage and occupational, educational, and geographic mobility, could be pursued. Indicators of local economic opportunity, as well as demographic opportunity, could be used to measure structural constraints on current ethnic behavior, and group differences could be evaluated net of local opportunity for behavior. Similarly, the comparison of groups should be expanded; this will require unusually clear historical understandings of the patterns and timing of immigration for each group, the rate of discrimination they faced, and the amount of opportunity in the destination labor markets at the time of immigration. Our hypothesis is that much of the variation between ethnic groups on the various measures of behavior will be explained, again, by structural opportunity, in the form of local economic structure and regional labor markets. When significant cultural differences continue to exist after present economic and demographic opportunities have been accounted for, researchers should concentrate on the causal role of, and emergence or crystallization of, ethnic culture in the near past of political-economic, demographic, and cultural history.

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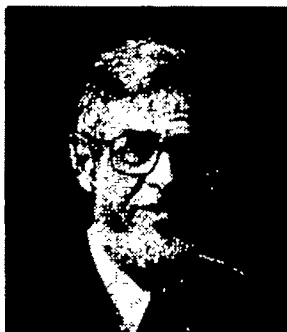


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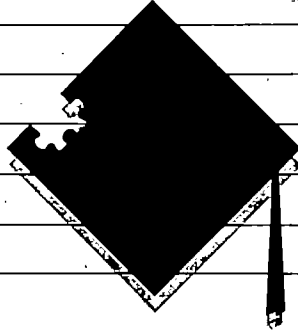
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(Revised January 1987)

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Goodman, Leo A. 1974a. "Exploratory Latent Structure Analysis Using Both Identifiable and Unidentifiable Models." *Biometrika* 61:215-31.
———. 1974b. "The Analysis of Systems of Qualitative Variables When Some of the Variables are Unobservable. Part I—A Modified Latent Structure Approach." *American Journal of Sociology* 79:1179-1259.
3. *Collections:*
Clausen, John A. 1972. "The Life Course of Individuals." Pp. 457-514 in *Aging and Society*, vol. 3, *A Sociology of Age Stratification*, edited by M.W. Riley, M. Johnson, and A. Foner. New York: Russell Sage.
Elder, Glen H. 1975. "Age Differentiation and the Life Course." Pp. 165-90 in *Annual Review of Sociology*, vol. 1, edited by A. Inkeles, J. Coleman, and N. Smelser. Palo Alto, CA: Annual Reviews.

See 1986 and later issues for further examples.

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THE FORMATIVE YEARS OF U.S. SOCIAL SPENDING POLICIES: THEORIES OF THE WELFARE STATE AND THE AMERICAN STATES DURING THE GREAT DEPRESSION

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This paper reports the results of a cross-sectional analysis of emergency relief, unemployment insurance, and old-age pensions in the 48 American states. It analyzes six outcomes: state emergency-relief expenditures and federal emergency-relief expenditures from 1933 to 1935; the timing of passage of unemployment-compensation legislation; the timing of passage of old-age pension legislation; and the contents of old-age pension and unemployment-compensation legislation. These outcomes represent different dimensions of social policy and are used to appraise three theoretical approaches: economic, democratic politics, and statist explanations. In the analysis, the sample is split into industrialized and nonindustrialized states, in accordance with recent cross-national research on social policy and social spending. Although the results yield some support for all three perspectives, the statist perspective is especially well supported. The findings suggest that the different perspectives are limited in applicability to specific outcomes or samples, or both. The superior performance of the statist perspective is due to its applicability across outcomes and subsamples.

Before the New Deal, the history of modern social spending in America was a history of subnational policies. During the Progressive Era, most states passed workmen's compensation and mothers' pensions legislation. Health and unemployment insurance were debated in several states, only to be rejected. In the 1920s, several states debated and passed means-tested old-age pensions. The beginning of the Great Depression saw the return of agitation for unemployment insurance and the passage of several state-level unemployment-compensation laws before the signing of the Social Security Act in August

1935. The study of early state-level social-policy developments is of interest partly because they were the only game in town until the New Deal. More important, evidence about the development of social policy in the American states before World War II can provide evidence for theories of the determinants of social policies.

Although there have been few social-policy innovations since the economic slump of the 1970s, the study of social policies has flourished. Initially, researchers asked why some countries spent more on social programs in the postwar period than others did (e.g., Wilensky 1975). Later research focused on more detailed questions: Why did some countries adopt social programs before others (Collier and Messick 1977; Schneider 1982)? How and why do characteristics of social programs vary across nations (Alber 1981)? Researchers have also examined their theories with evidence from earlier periods (Flora and Alber 1981; Orloff and Skocpol 1984). Moreover, studies of postwar spending patterns now disaggregate them into component programs (Castles 1982; Pampel and Williamson, forthcoming).

THE PRESENT RESEARCH

In this paper, we apply the theoretical insights

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of cross-national research to the issue of American state social policy in the 1930s. Specifically, we use multiple-regression techniques to analyze differences among states in spending for state and federal emergency relief, in the timing of the adoption of old-age pensions and of unemployment compensation, and in program characteristics of old-age pension and unemployment-compensation legislation. Our research plan has several advantages. First, we address a gap in the quantitative literature, which mainly deals with postwar spending and often ignores initial aspects of programs. Second, we examine several kinds of legislative outcomes, all of which add theoretical leverage. Third, besides comparing spending, time of adoption, and program characteristics, we explore programs claimed to be constructed in significantly different ways. Social insurance and means-tested programs have different ideological justifications in America ("social security" versus "welfare") and allegedly serve different functions (O'Connor 1973). In addition, unemployment compensation required the passage of a payroll tax. Thus we can examine the influence of the character of taxation on spending programs (Wilensky 1981). Fourth, we examine the differences between how the states and how the national government approached a similar problem (unemployment relief). Finally, we examine separately a subsample of industrialized and democratic states, a group frequently examined in cross-national research. In addressing theoretical debates, we can achieve a better historical understanding of the differences among states in the formative years of modern American social policies.

Such an analysis may present difficulties in addressing a literature concerning differences among nations. Important independent variables might inadvertently be held constant in the American states. Proponents of the social-democratic model, for instance, might claim that because America lacked labor parties, it would be impossible to test the model fairly. Similarly, a researcher in the statist tradition might argue that the capacities of the American state were too weak, or that the American governmental system controls for federalism, which retards public spending (Wilensky 1981; Castles 1982). These objections are minor. Although there were no major labor parties in 1930s America, various measures of partisanship can be constructed

(Jennings 1979). These measures include the strength of urban Democrats, an American functional approximation of social-democratic strength (Amenta, Clemens, Olsen, Parikh, and Skocpol 1987). And although the influence of federalism cannot be tested here, the effect of local and national politics on state politics can be examined. The American setting serves as a laboratory because the states largely determined their own policies in the 1920s and 1930s. The 1935 Social Security Act created only one *national* spending program. In addition, the states, whose numbers are comparable to those in cross-national work, varied greatly on almost all independent variables invoked in cross-national research. Data on American states are more likely to be comparable across cases than are cross-national data.

BRIEF HISTORIES OF THREE DEPRESSION-ERA SOCIAL-SPENDING POLICIES

Emergency Relief

Although the Great Depression was international in scope, the initial American relief efforts were local or voluntary. The Hoover administration considered unemployment a problem for lower levels of government. But by 1932, private sources and local government could no longer meet the relief burden (Bitterman 1938, p. 149). In July 1932, Hoover signed legislation authorizing the Reconstruction Finance Corporation (RFC) to lend money for relief to states and localities. At the end of 1932, when Hoover was voted out of office, the RFC had disbursed only \$30 million (Brown 1940, pp. 125–26).

The Roosevelt administration adopted a more generous approach. In May 1933, Roosevelt signed the Federal Emergency Relief Act, authorizing the Federal Emergency Relief Administration (FERA); Harry Hopkins was placed in charge of it (Brown 1940, pp. 140–49; Charles 1963, pp. 23–43). The direct cash payments provided by this program constituted the government's main weapon in the fight against unemployment, which climbed to 25 percent in 1933. From 1933 through 1935, FERA disbursed approximately \$3 billion to the states, mainly on a discretionary basis. According to Hopkins (1936, pp. 97–107), the criteria were the state's need and its taxation efforts to pay its

share of relief costs. During these years, the federal share of government relief jumped to 71 percent. Nonindustrial western states received the largest amounts of per capita federal emergency relief; Nevada, South Dakota, and Montana were the leaders. States began to administer relief in 1931. Unlike the local governments, which relied on property taxes, states could levy sales, excise, and income taxes; some states could issue debt. Half of the states had begun relief programs by 1933. Still, during the years from 1933 to 1935, the state share of government relief was only 13 percent (Bitterman 1938, pp. 150–55). During the period, Pennsylvania and New York provided the largest amounts of per capita state emergency relief; Florida, Georgia, North Carolina, South Carolina, Louisiana, South Dakota, and Nebraska provided none.

Unemployment Compensation

In contrast, the story of unemployment compensation chiefly concerned the states. In 1916 a Massachusetts special commission recommended compulsory unemployment insurance, but nothing was passed, and the issue was dormant until the postwar slump of 1921. Wisconsin kept the issue alive through the 1920s. A series of “preventionist” bills modeled on its workmen’s compensation act were developed through the Wisconsin Industrial Commission (Amenta et al. 1987). In January 1932, a bill was passed providing for compulsory individual-company unemployment reserves and taxes only on employers. A business had to build up its own unemployment fund to a prescribed level, and, if it did not lay off any workers, it did not need to make further payments. If the company went under, its workers received only what remained in the fund. In October 1932, an Ohio study commission proposed an alternative: relatively generous unemployment insurance with a statewide pooled fund and employer and employee contributions. Employers could not entirely avoid taxes, and employees were covered regardless of their employer’s financial health (Rubinow 1933). In April 1935, New York became the first state to pass an unemployment *insurance* bill.

Meanwhile, on the national level, in February 1934 Senator Robert Wagner of New York cosponsored the Wagner-Lewis bill, with a “tax-offset” provision. Congress

would tax equally employers’ payrolls, but employers could receive a full credit against the federal tax if the state were to pass a suitable law (Nelson 1969, p. 199). In effect, this bill would blunt opposition to state-level legislation and promote state-by-state differences in the contents of laws. Roosevelt appointed the Committee on Economic Security (CES) in June 1934 to develop a comprehensive security program. In January 1935, this committee recommended a federal-state unemployment-compensation system similar to the Wagner-Lewis bill. These provisions were incorporated in the Social Security Act of August 14, 1935.

The debate raged on at the state level. Seven states passed bills before the Social Security Act was signed. Yet the incentives in the federal legislation did not immediately end political conflict; only 10 additional states passed legislation from the signing of the act through November 1936. In that month, the New York law survived a Supreme Court test (Ingalls 1975, p. 85). During the next month, 18 states passed legislation. The Supreme Court ruled the Social Security Act constitutional in May 1937, and by July the last few states had fallen in line. Because each state was free to write its own provisions for taxation and benefits, legislation differed greatly among the states. The main sources of divergence were the sizes of firms covered, the taxation provisions, the type of administration, the length of benefits, and the waiting period (the time between unemployment and benefits). In comparison with the introductory laws of Europe, the U.S. laws were characterized by long waiting periods (Alber 1981, p. 160). The U.S. waiting periods were likely to be two or three weeks, whereas no introductory, compulsory European law had a waiting period of longer than a week.

Old-Age Pensions

The history of U.S. old-age pensions parallels that of unemployment insurance, but with greater early success. The agitation for old-age pensions began with the states during the Progressive Era. The movement founded until the 1920s, when several states appointed investigative commissions. In 1923, bills were passed in Montana, Nevada, and Pennsylvania. This “county-optional” legislation merely allowed counties to grant old-age pensions; the Nevada law soon proved

inoperative, the Pennsylvania law unconstitutional, and the Montana law inadequate. By 1928, only six states had passed county-optional pension legislation, and only two states were actually paying pensions (Brandeis 1935, pp. 611–14; Epstein [1938] 1968, pp. 532–37). At the beginning of the Depression, agitation was renewed and focused on *compulsory* bills. Twelve states, led by California, passed compulsory bills before the end of 1931. By the middle of 1934, when Roosevelt appointed the CES, 28 states had adopted old-age pensions: 23 compulsory laws, 5 county-optional. Although in all cases the programs were means-tested, the laws varied greatly in benefit levels and sources of funding (Douglas 1936, pp. 6–10).

Additionally, federal legislation was proposed to spur the states to pass old-age pensions. The Depression passed its nadir in 1933 with 20 states still holding out, the holdouts including the 11 former states of the Confederacy. The Dill-Connelly bill of 1933–34 called for grants-in-aid to states amounting to one-third of their expenditures on old-age pensions. As with the Wagner-Lewis bill, Roosevelt stalled the bill to gain time to develop his own economic-security program, and, once again, the CES proposal was similar to the previous proposed legislation. The administration's bill called for grants-in-aid equal to one-half of state expenditures on old-age pensions, with a maximum of \$15 per month from the federal government. Congress weakened language prescribing pecuniary adequacy in pensions (Douglas 1936, pp. 100–1; Quadagno 1988).

At the end of 1934, a movement of the aged erupted, led by Dr. Francis E. Townsend, a California medical officer, which revolved about an old-age pension program. In its original form, the so-called Townsend plan called for national \$200 monthly pensions for everyone 60 years old or older, as long as the recipient was retired and would spend the money within the month. The plan was to be financed by a form of sales tax. This movement came too late to influence the substance of the earliest state-level old-age pension plans or national legislation. Approximately seven thousand local clubs were formed across the nation with about two million members in 1936 (Holtzman 1963, p. 48), and they became a force in the politics of social spending for the aged. By the end of 1938, all states had passed pension legisla-

tion. The states varied widely in levels of benefits and eligibility restrictions. In early 1939, benefit levels ranged from approximately \$32 per month in California to approximately \$6 in Arkansas.

THREE THEORETICAL PERSPECTIVES

We appraise three types of theory that purport to explain developments in social-spending policies. These theories are general, having both cross-sectional and over-time implications; we address the former. The first perspective concerns economic explanations, the second democratic politics, and the third the role of the state. Aspects of the state are relevant to many social-policy outcomes across all subsamples.

Economic Approaches

One approach highlights the influence of structural economic changes on social policies. The *logic-of-industrialism* model holds that socioeconomic development and technological growth create social problems that must be solved by governments, regardless of the type of political system or ruling coalition (see Form 1979). The higher the level of industrialization and urbanization, the sooner the development of social programs and the greater the expenditures on them. For our purposes, the theory implies that high levels of urbanization and industrialization should bring relatively high spending on emergency relief and old-age pensions and a quicker passage of unemployment insurance and old-age pensions. Demographic changes, especially the representation of the aged in the population, are also claimed to spur the welfare state (Wilensky 1975). This line of argument usually focuses on spending and the adoption of programs, but not the characteristics of social-spending policies. This perspective has proven useful in explaining postwar spending patterns in analyses of large numbers of nations and states (e.g., Wilensky 1975; Dye 1966) and differences in the timing of program adoption in American states (Walker 1969; Gray 1973). When subsamples of rich nations are examined, however, the relationships often break down, and political variables explain better the differences in spending and timing of adoption (Flora and Alber 1981; Castles 1982). Demographic structure continues to have an influence on

spending (Castles 1982; Pampel and Williamson 1985). The sample is split, researchers argue, because the determinants of social policy are different in industrialized, democratic nations. In this paper, we split the sample by the level of industrialization to see whether relationships hold up within subgroups.

A second type of economic theory, the *logic of capitalism* (O'Connor 1973; Gough 1979), also argues that developments in the welfare state follow from economic processes and societal needs. Unlike industrialization theory, the logic of capitalism concerns the needs of capital accumulation in the creation of social programs. Both the capitalism and industrialization models claim that certain needs must be addressed by the state. The logic-of-capitalism approach points to the economic and political needs of *capital*, such as control over labor. Moreover, this model focuses on the process of capital accumulation, including economic crises. The version developed by O'Connor (1973) separates means-tested programs from social insurance. According to this view, "social security" or social insurance aids capitalist accumulation; "welfare" or means-tested assistance serves the political function of legitimation. Accordingly, this approach implies that the two types of spending programs have different determinants. In our analysis, we can compare the determinants of relief and old-age pensions, means-tested programs, with the determinants of unemployment insurance, a social-insurance program. The model should apply to the adoption of programs as well as to spending for them. Because of the emphasis on labor control, the logic of capitalism has implications for the waiting period in unemployment insurance. In short, the logic-of-capitalism argument applies to almost all of the types of outcomes and predicts differential determinants for means-tested and insurance programs. In contrast, industrialization theory says little about the characteristics of policies or the national allocation of spending to states and instead focuses on the timing of policies and spending for them.

Democratic Politics

Unlike economic theories, theories of democratic politics claim that political activity has an independent influence on social-policy outcomes. One view, the *electoral-politics*

perspective, argues that the existence of democratic political institutions or the degree of political participation or competition positively influences the adoption of social policies (Schneider 1982) and spending for them (Pampel and Williamson 1985). The best known electoral-politics hypothesis focuses on political competition. In politics where elections are closely contested, the candidates will use social-spending policies to bid for votes. The logic of the argument applies to the full gamut of outcomes. The closer the electoral totals, the sooner the adoption of social programs, the more generous the spending on them, and the more leniency in administration. Who controls the government is less important than the closeness of the election. Although this perspective has American origins (Key 1949), most of the empirical support for it comes from cross-national research (Myles 1984; Pampel and Williamson 1985). Most studies on American states find little influence of political competition on spending (Dye 1966; Tucker and Herzik 1986; cf. Sharkansky and Hofferbert 1969) or program adoption (Walker 1969).

Party partisanship, rather than competition, has been the focal point of social-spending studies of rich capitalist democracies. Research has focused on the length of rule of social-democratic parties in creating and augmenting social-spending policies (see Shalev 1983) or on the role of right-wing parties in preventing public spending (Castles 1982). One would also expect that the rule of right-wing parties would lead to the adoption of less generous programs with higher degrees of state control. Those who focus on partisanship might argue that political competition leads to a divided government. Hansen (1983) found that a *lack* of political competition led to state-level tax innovations during the 1930s. Because social policies often require tax increases to pay for them and because unemployment compensation included a special tax, the relationship between electoral competition and social-policy changes might be negative.

The political-competition and political-partisanship perspectives also make divergent predictions about the distribution of national spending to subnational units of government. From the viewpoint of political competition, one would expect that a national government would direct discretionary money to states where electoral competition has been close, to

tip the balance in favor of candidates from the administration's party. Wright (1974) found that national New Deal spending from 1933 through 1940 went to the more politically competitive states. A political-partisanship perspective would expect that the party in national power would reward supporters of its own party. States where the favored party dominates would receive greater national spending.

A second way democracy matters for policy is through *nonelectoral politics*: interest groups, social movements, and protest. Piven and Cloward (1977) claimed that protest during political crises has led to gains in social policies (cf. Skocpol and Amenta 1986, pp. 138-39). Other types of collective action, such as endorsing political parties or mobilizing protest groups (Tilly 1978), might influence policy. The leading candidates are organized labor or single-issue movements. Gough (1979) claimed that a strong labor movement will tend to exert pressure for improvements in social policy regardless of the regime in power. Similarly, Pampel and Williamson (forthcoming) argue that the political influence of the aged accounts for differences in postwar spending for pensions and health among capitalist democracies. This perspective applies to the origins of social policies as well and makes few predictions about the amount of state control legislated in policies.

To sum up, the democratic theories vary in their predictions. Political participation is applicable to all units and implies positive effects on a wide range of outcomes, but not national spending on states or program control. The related idea of electoral competition is frequently indeterminate with respect to its effects. Partisanship is generally confined to industrialized democracies and predicts a wide range of outcomes. Theories of nonelectoral politics are also confined to democracies and concern the range of spending and adoption outcomes, but not the aspects of control in policies.

States and Social Policies

A third approach stresses the independent causal influence of the state. State-centered analyses assert that state actions cannot be reduced to societal characteristics or events (e.g., March and Olson 1984; Skocpol 1985). The state is neither a tool that social groups

use to achieve their ends nor a mere reflection of external social forces. State policies are shaped by the structure, character, and historical experiences of the state itself. State capacities, state autonomy, and state centralization are often mentioned as three key characteristics (Skowronek 1982, p. 20; Tilly 1975, p. 32). Of these dimensions, *state capacities* have been the most frequently analyzed. The fiscal strength of the state is often examined in the following fashion: the greater the fiscal capacities of the state, the sooner the passage of social legislation and the more generous the spending on social programs (DeViney 1983; see also Griffin, Devine, and Wallace 1983). Another type of capacity is bureaucratic; bureaucratic states led in the adoption of social policies (Flora and Alber 1981). State capacities apply also to discretionary national spending on state policies; a national government may allocate funds according to the ability of the subnational unit to spend fairly. State capacities have only rarely been analyzed in quantitative empirical analysis of social-policy outcomes.

The second type of statist theory concerns the *indirect influence of the state* on social-spending policies. This perspective holds that related policies will influence one another and that previous developments in a given policy area will influence later developments; aspects of previous programs considered successful should lead to similar provisions in related programs (Amenta et al. 1987). Prior bureaucratic experience often defines the set of alternatives from which a policy choice is made. Bureaucracies with strong powers should result in tight controls over programs. One relationship concerns the influence of taxation on spending programs. Wilensky (1981) argues that the use of direct or "visible" taxation to support social programs will engender a political reaction against them; the form of taxation, as opposed to the amount, has an impact on spending programs. In addition, this perspective attempts to explain policy contents. Another indirect influence concerns competition among levels of government. Federal politics are often characterized as "welfare laggards" (see Castles 1982). The establishment of programs at lower levels of government will constrain developments at a higher level of government, and vice versa. For instance, the federal Social Security Act was able to provide *national* old-age insurance because

there were no state-level programs; the existence of many state-level old-age pension programs undermined the possibility of their nationalization (Skocpol and Amenta 1985).

More so than other perspectives, state capacities can be applied to several different types of policy outcome, including the origins of policies, spending for policies, characteristics of policies, and spending by the national government in subnational units. In addition, strongly bureaucratic states should lead to strongly bureaucratic programs. These factors are also relevant in industrialized and nonindustrialized units. The indirect influences of the state have similar characteristics. The taxation system behind a program will influence the determinants and the fate of the program. Where intergovernmental conflict is possible, levels of government will compete for control of programs.

THE MEASURES

Measuring the Dependent Variables

We analyze six measures of the dependent variables. Two of these concern emergency relief, two concern unemployment compensation, and two concern old-age pensions. We compute the natural logarithms of per capita expenditures on state and federal emergency relief from 1933 through 1935 (Bitterman 1938, p. 168; U.S. Federal Works Agency 1942); the logarithm transformations are used to normalize the distributions. The timing of adoption of unemployment compensation scores one for Wisconsin and higher values for the other states according to the number of months later the state passed a bill (Stewart 1938, p. 28). The timing of adoption of *compulsory* old-age pensions¹ scores one for California, which enacted a compulsory law in 1929, and higher values for the rest according to the number of years later the state passed such a bill (Epstein [1938] 1968, pp. 534–35; U.S. Social Security Board 1937, table between pp. 161–62; 1938a). As for program characteristics, we measure the waiting period—the number of weeks the unemployed must wait for benefits (Stewart

1938, pp. 606–7). This measure represents the *degree of control* the state exerts over the individual (Alber 1981) and ranges from two to six weeks. Finally, we measured the average amount of old-age pension allotted at the beginning of 1939, the first year after which all states had passed legislation (U.S. Social Security Board 1938b, p. 54; 1939a, p. 44; 1939b, p. 47). This measure taps the *generosity* of pensions.

Measuring the Independent Variables

For the economic approaches, we use six measures. The first three concern the logic of industrialism. The level of *industrialization* is operationalized by per capita value added in manufacturing in 1929 (U.S. Bureau of the Census 1937, pp. 765–69). The second measure, *urbanization* is the percent of population in cities of 50,000 or larger in 1930 (U.S. Bureau of the Census 1935, pp. 20–25). We also examine the percentage of *aged* people (65 years and older) in 1930 (U.S. Bureau of the Census 1935, pp. 36–37).² Three measures concern the influence of the Depression. The first operationalizes how well the state weathered the *manufacturing depression*: wage earners in manufacturing in 1933 divided by the same measure in 1929 (U.S. Bureau of Census 1937, pp. 765–69). Similarly, the measure *farming depression* is the average of gross farm income in 1932, 1933, and 1934 divided by average gross farm income from 1924 through 1928 (U.S. Bureau of the Census, 1932 p. 608; 1935, p. 589).³ Finally, we examine the average rate of *unemployment* from 1930 to 1933 (Social Security Board 1937, pp. 58–59). Table 1, a correlation matrix of the independent measures, reveals that the economic measures mainly capture different aspects of the economy. The level of industrialization is correlated highly with a number of the other measures, including urbanization (.77) and percent aged (.45), as one might expect. But industrialization is also highly correlated with the stability in farm incomes (.60) and

¹ Because of the minimal spending of county-optional acts, the timing of adoption of compulsory acts is more theoretically justified. Other researchers (Dawson 1967; Gray 1973) combine both optional and compulsory legislation.

² In the analyses of the average pension, we use the percentage of those 65 years and older in 1940.

³ We employ the measure farming depression in the full sample and the nonindustrialized sample; we employ the measure manufacturing depression in the full sample and in the industrialized sample.

unemployment (.54). In addition, when the sample is split according to the level of industrialization, within the two subsamples industrialization still varies considerably (results not shown).

To operationalize electoral politics theories, we use several measures. The first is the *electoral disparity* between the two major parties: the average difference from equality in voting for the gubernatorial candidates of the two major parties, in elections from 1918

to 1934 (*Congressional Quarterly* 1985, pp. 489-536; on the use of averages, see Griffin, Walters, O'Connell, and Moor 1986). A state that gave 100 percent support to either party in every gubernatorial election (for instance, South Carolina) scores one. *Electoral participation* is the mean percentage of eligible voters who voted in presidential elections from 1920 through 1932 (U.S. Bureau of the Census 1975, pp. 1071-72). *Electoral volatility*, the variability in the support for the

Table 1. Correlation Matrix of Independent Measures (N=48)

	1	2	3	4	5	6
1 Industrialization						
2 Unemployment	.537					
3 Manufacturing depression	.021	-.346				
4 Farming depression	.599	.325	.139			
5 Urbanization	.772	.425	.057	.521		
6 Percent aged	.450	.008	-.115	.189	.283	
7 Electoral disparity	-.364	-.402	.143	-.138	-.246	-.374
8 Electoral participation	.373	.272	-.221	-.024	.216	.523
9 Electoral volatility	-.264	-.337	.002	-.100	-.191	-.215
10 Townsend clubs	-.099	-.051	-.214	-.131	-.136	.361
11 Townsend plans	-.042	.085	-.222	-.108	-.010	.097
12 Union density	.268	.422	-.312	.035	.244	.151
13 Democratic strength	-.342	-.225	.226	-.048	-.212	-.622
14 Republican strength	.430	.344	-.192	.118	.214	.616
15 Urban Democrats	-.016	.018	.024	.038	.320	-.107
16 State emergency relief	.630	.438	-.114	.410	.634	.220
17 Local emergency relief	.516	.231	-.162	.109	.360	.694
18 Administrative powers	.095	.130	-.229	-.048	.190	.180
19 Fiscal strength	.032	.105	-.263	.019	-.121	.284
20 Taxation innovations	-.282	.121	-.321	-.217	-.231	-.218
	7	8	9	10	11	12
8 Electoral participation	-.807					
9 Electoral volatility	.818	-.586				
10 Townsend clubs	-.144	.284	-.025			
11 Townsend plans	-.079	.236	.048	.201		
12 Union density	-.402	.444	-.207	.160	.352	
13 Democratic strength	.674	-.826	.425	-.321	-.352	-.444
14 Republican strength	-.790	.850	-.583	.327	.205	.362
15 Urban Democrats	.036	-.161	-.030	-.095	-.116	-.064
16 State emergency relief	-.392	.390	-.310	-.056	-.062	.295
17 Local emergency relief	-.444	.663	-.310	.247	.309	.204
18 Administrative powers	-.308	.257	-.144	.037	.403	.366
19 Fiscal strength	-.373	.465	-.330	.173	.333	.141
20 Taxation innovations	-.068	.065	-.123	.119	.032	.104
	13	14	15	16	17	18
14 Republican strength	-.916					
15 Urban Democrats	.202	-.168				
16 State emergency relief	-.322	.389	.087			
17 Local emergency relief	-.657	.659	-.050	.232		
18 Administrative powers	-.296	.282	.282	.285	.295	
19 Fiscal strength	-.445	.461	-.115	.235	.391	.245
20 Taxation innovations	-.127	.064	-.225	-.055	-.184	-.156
	19					
20 Taxation innovations	-.032					

parties (see Wright 1974), is the sum of the standard deviations of the percentage of party support for each of the two major parties in gubernatorial elections from 1918 to 1934 (*Congressional Quarterly* 1985, pp. 489–536).⁴ Electoral disparity is closely correlated with participation ($-.81$) and volatility ($.82$), but less so in the sample of industrialized states ($-.48$ and $.70$, respectively). To operationalize electoral partisanship, our working hypothesis is that, among the industrialized states, the Democrats constituted a party of the center, the Republicans a party of the right. Otherwise, we are agnostic. We measure the mean of *Democratic and Republican support* in the gubernatorial elections from 1918 to 1934 (*Congressional Quarterly* 1985, pp. 489–536).⁵ A third measure, *urban Democrats*, scores one if a state is higher than the mean in urbanization for the industrialized states and if Democratic support is greater than Republican support; it is employed only in the industrialized sample.

The common claim (e.g., Dye 1966) that industrialization enhances political competition receives only mixed support. Only the correlations between industrialization and electoral disparity and participation are modestly strong ($-.36$ and $.37$, respectively). The other correlations between the industrialization and competition variables are near zero or in the wrong direction. In the sample of industrialized states, there is little difference in the results (results not shown). Theoretically, we see industrialization and political processes as separate; the correlations support this.

In appraising the influence of nonelectoral politics, we are restricted somewhat by the availability of data. The Townsend movement came too late to have any effect on the initial passage of state-level old-age pensions. We

can test, however, whether the movement influenced the level of benefits in 1939, by which time all states had conformed to the Social Security Act. To measure the strength of state-level Townsend organizations, we count the total per capita number of *Townsend clubs* from 1934 to 1950 (Holtzman 1963, pp. 50–51).⁶ We measure the collective action of the movement by summing the times until 1939 that a state legislature passed a resolution demanding the national passage of the *Townsend plan* (Holtzman 1963, p. 192). Similarly, there are no state-level data on unionization until 1939 (Troy and Sheflin 1985, p. 7-3). *Union density* is the number of union members in 1939 as a percentage of the nonagricultural employed in 1940 (U.S. Bureau of Census 1948, pp. 194, 196). Union density should increase average old-age pensions in 1939.

We employ several measures to approximate the statist perspective. The measure *fiscal strength* is per capita state revenues in 1932 (U.S. Bureau of the Census 1935, pp. 200–202). To measure bureaucratic capacities, we calculated *administrative powers*; it scores one if the state labor commissioner had by 1929 rule-making authority in the administration of safety laws, and zero otherwise (Brandeis 1935, p. 654). We expect that states with bureaus exercising such administrative powers would be leaders in the generation of new spending programs and that these bodies would influence the content of legislation. Moreover, we expect that the federal government would spend more money in states with strong bureaucratic traditions. In addition, we include measures of indirect state effects. We employ the logarithm of per capita *state emergency relief* to see whether state efforts in emergency relief expenditures are related to unemployment-compensation outcomes. Except Wisconsin, all states dispensed emergency relief or received federal relief before passing unemployment-compensation legislation. Furthermore, to explain federal emergency-relief allocations to the states, we compute the measure *taxation innovations*. It scores one for every state passing a corporation or individual income

⁴ As a measure of electoral politics, electoral volatility is valid only for the industrialized subsample. The nonindustrialized subsample is dominated by states in which the disparity between the two parties is so great as to make even substantial electoral variability politically meaningless.

⁵ Because competition is hypothesized to have either positive or negative effects on social-policy outcomes, all statistical tests of coefficients for electoral disparity are two-tailed. The same is true for partisan support in the 48-case and 28-case samples. Otherwise, all tests are one-tailed.

⁶ Although these data include all of the more than 12,302 clubs in existence between 1934 and 1950, the vast majority had been created by 1939, the year the movement's membership peaked (Holtzman 1963, p. 49).

tax or a sales tax in 1932 or 1933 (Hansen 1983, p. 149). As noted above, Hopkins claimed to make relief contingent on a state's ability to increase its fiscal capacities. Finally, to measure competition among levels of government, we employ the natural logarithm of per capita *local emergency relief* (Bitterman 1938, p. 168). We expect a trade-off between local and state emergency relief.

THE RESULTS

First, we appraise the three main arguments by regressing the dependent measures on all measures from each of the three major groups of independent measures. (All regressions were run with the PC version of BMDP, Module 1R.) Next, we regress the dependent measures onto the best three independent measures from each of the three theoretical groups.⁷ As is the case with large-scale cross-national research, the economic models generally outperform the other two. Among the 48-case sample, the economic measures explain the greatest amount of variance in three of the six dependent measures. The political measures explain the greatest amount of variance in two cases, and the state measures in one case. Using the results of the first regressions, we fit a model with the best performing independent measures from all three groups, eliminating insignificant and very highly colinear measures. To test arguments concerning industrial and democratic politics, we split the sample according to the level of industrialization. We apply the same procedure to subsamples of 20 industrialized states and 28 nonindustrialized states. In these experiments, the statist perspective fares

better than democratic politics or the economic approaches. Notably, the measure of administrative power proves significant in most of the regression equations, far outperforming any other single measure.

Emergency Relief

Splitting the sample makes a difference for the equations estimating state emergency relief. The best-fitting model for all of the states includes measures of industrialization, urbanization, fiscal strength, local relief, and electoral participation; this model explains 63 percent of the variance. The coefficients are significant and in the expected direction: the greater the industrialization and urbanization, the more spent on state relief; the greater the state's resources, the more spent; the greater the local relief effort, the less spent; the greater the electoral participation, the more spent. The logic-of-industrialism perspective is strongly supported; in the subsample of industrialized states, industrialization is still positive and significantly related to state expenditures. Several statist measures—fiscal strength, administrative powers, and taxation innovations—prove significant among the nonindustrialized states. In addition, competition between governments is evident in negative effect of local relief efforts. This relationship is stronger in the industrialized states, probably because local relief was minimal for the nonindustrial states. Finally, electoral participation increases spending when all 48 states are included.

The question posed about federal emergency relief is different from the one concerning state emergency relief. For state relief, the question is: What is it about the state's economics or politics that leads to more or less state spending? For federal emergency relief: What is it about the state's economics or politics that leads to favor or disfavor from the federal government as expressed in emergency relief disbursements to the state? The Roosevelt administration claimed to respond to need. This would imply giving more money to states with high unemployment, in accordance with the logic-of-capitalism theory. It also claimed to reward states willing and able to raise funds to spend on relief, in accordance with the state-centered perspective. Relying on political models, others might argue that Roosevelt

⁷ Because old-age pensions began to be adopted sooner than unemployment compensation, all analyses concerning the timing of adoption of old-age pensions include independent measures scored from 1930 or earlier. For instance, all measures having to do with the severity of the depression and the distribution of emergency relief are not employed. All electoral measures are calculated with an endpoint of 1930. Per capita revenues are measured in 1922. Because of the eliminated measures, we report results from the timing of adoption of old-age pensions on the best two equations regressing the timing of adoption of old-age pensions on the best two independent measures from each theoretical group.

Table 2. Determinants of Emergency Relief, 1933-1935

Dependent Measure: State Emergency Relief			
Ind. Measures	All States	Industrialized	Nonindustrialized
Industrialization	.363** $t = 2.23$	.390** $t = 1.81$	.251* $t = 1.53$
Urbanization	.492*** $t = 3.23$	—	—
Electoral participation	.303** $t = 2.28$	—	—
Fiscal strength	.321*** $t = 3.09$	—	.254* $t = 1.40$
Local emergency relief	-.459*** $t = -3.29$	-.450*** $t = -2.09$	—
Administrative powers	—	—	.325** $t = 1.77$
Taxation innovations	—	—	.367** $t = 2.21$
<i>N</i>	48	20	28
<i>R</i> ²	.628	.285	.398
Dependent Measure: Federal Emergency Relief			
Ind. Measures	All States	Industrialized	Nonindustrialized
Unemployment rate	.251** $t = 2.02$	.503*** $t = 3.16$	.295* $t = 1.62$
Administrative powers	.446*** $t = 3.58$	.653*** $t = 4.29$	.385*** $t = 2.17$
Taxation innovations	.279** $t = 2.24$	.228* $t = 1.45$	.148 $t = 0.84$
<i>N</i>	48	20	28
<i>R</i> ²	.347	.645	.333

Note: Coefficients are standardized.

* $p < .1$

** $p < .05$

*** $p < .01$ (See note 4.)

allocated relief to win elections or reward supporters.

As Table 2 indicates, the analysis of federal relief supports the claims of the administration and the theoretical perspectives embedded in its rhetoric. Across the 48 states, the best model explains 35 percent of the variance and includes measures of need during the Depression. The coefficient for the rate of unemployment is strong and positive. In addition, the state's willingness to impose new forms of taxation has a positive effect on the federal relief expenditures. A state that responded to the administration's pressures to increase taxes was rewarded. Moreover, the presence of administrative powers has a significant positive effect. This suggests that the administration was concerned with the ability of a state's bureaus to spend money fairly. The argument that the money was

spent for narrow political ends receives only minor support. Notably, the main political competition variables, electoral disparity and volatility, do not prove significant in the model for all states (results not shown).³

The Timing of Unemployment Compensation and Old-Age Pensions

The timing of unemployment compensation followed a different dynamic than state expenditures for emergency relief. In the case

³ Republican support has a negative effect and verges on significance at the .10 level for the 48-case sample (results not shown). This constitutes minor support for the argument that the administration punished its enemies in the distribution of federal emergency relief.

of unemployment compensation, fiscal strength made no difference. Industrialization has a significant coefficient for the sample of 48 states. Consistent with cross-national research, the coefficient is insignificant for both subsamples. Electoral disparity has a significant effect in speeding the passage of legislation for all samples. The presence or absence of a state labor administration with the power to make rules, i.e., administrative power, has the strongest effect for the 48- and the 20-case samples. Together, the two measures explain 45 percent of the variance in the timing of unemployment compensation among the industrialized states. The existence of strong administrative authority will aid the passage of a related program. High expenditures in state relief translated into quicker passage of legislation only among the nonindustrialized states. Moreover, in the nonindustrialized states, electoral disparity also speeds

the passage of unemployment-compensation legislation.

As Table 3 shows, the determinants of the timing of old-age pension legislation are somewhat similar. Urbanization hastens the timing of passage of old-age pensions in the 48-case sample; industrialization, a close substitute for urbanization, speeds the passage of unemployment compensation. Notably, however, the representation of the aged has no independent effect on the timing of adoption. Moreover, the coefficient for administrative powers is strong and in the proper direction for the timing of passage of both types of legislation among the industrialized states—strong evidence for the statist perspective. The equation for the industrialized states includes administrative powers, fiscal strength, electoral participation, and urbanization and explains 49 percent of the variance. For the 48-case example, fiscal strength and Republi-

Table 3. Determinants of the Timing of Adoption of Legislation

Dependent Measure: Timing of Adoption of Unemployment Compensation			
Ind. Measures	All States	Industrialized	Nonindustrialized
Industrialization	-.327** $t = -2.38$	—	—
Electoral disparity	-.324** $t = -2.25$	-.362* $t = -2.05$	-.426** $t = -2.38$
Administrative powers	-.455*** $t = -3.38$	-.534*** $t = -2.96$	—
State emergency relief	—	—	-.507*** $t = -2.83$
<i>N</i>	48	20	28
<i>R</i> ²	.279	.450	.290
Dependent Measure: Timing of Adoption of Old-Age Pensions			
Ind. Measures	All States	Industrialized	Nonindustrialized
Urbanization	-.322*** $t = -2.57$	-.274* $t = -1.41$	—
Republican support	-.221 $t = -1.51$	—	—
Electoral participation	—	-.490** $t = -2.39$	—
Fiscal strength	-.299** $t = -2.09$	-.524*** $t = -2.62$	-.396** $t = -2.20$
Administrative powers	—	-.390** $t = -1.94$	—
<i>N</i>	48	20	28
<i>R</i> ²	.343	.492	.157

Note: Coefficients are standardized.

* $p < .10$

** $p < .05$

*** $p < .01$ (See note 4.)

can support speed the adoption of pensions. As expected, Republican support has no independent effect among the industrialized states. For the nonindustrialized states, only fiscal strength speeds the passage. In other respects, the models differ for the two types of program. For instance, fiscal strength proves important for the timing of adoption of old-age pensions, but it does not influence the adoption of unemployment compensation.

The Characteristics of Legislation

The model for the average amount of old-age pensions shows some similarities to the model for the timing of adoption of old-age pensions. For the samples of all states and of industrialized states, the earlier the adoption the larger the average amount of pensions. In addition, in all three samples, the presence of

a rule-making authority for labor legislation has a directly positive effect on the average pension, controlling for the timing of adoption of old-age pensions. For the full sample, the enactment of legislation calling for a national Townsend clubs has a positive effect. Although the level of electoral participation has little effect on the adoption of pensions among the nonindustrialized states, it has a positive effect on the average amount of pension. The fiscal strength of the state also has a positive influence on pensions among the nonindustrialized states. Economic measures have no independent effect on the amount of pensions in any sample.

The waiting period in unemployment-compensation legislation gives some support to all three perspectives. A model including urban Democrats and administrative powers explains 29 percent of the variance in the waiting period for the industrialized states. As predicted by the statist model, the measure of

Table 4. Determinants of the Contents of Legislation

Dependent Measure: The Average Amount of Old-Age Pension			
Ind. Measures	All States	Industrialized	Nonindustrialized
Electoral participation	.374*** $t=3.72$	—	.213* $t=1.60$
Townsend plans	.139* $t=1.33$	—	—
Townsend clubs	—	—	.227** $t=2.08$
Adoption of old-age pensions	-.243*** $t=-2.25$	-.304** $t=-1.51$	—
Fiscal strength	—	—	.450*** $t=3.58$
Administrative powers	.362*** $t=3.54$	.453** $t=2.25$	.330*** $t=2.91$
<i>N</i>	48	20	28
<i>R</i> ²	.646	.397	.776
Dependent Measure: The Waiting Period for Unemployment Compensation			
Ind. Measures	All States	Industrialized	Nonindustrialized
Farming depression	.406*** $t=3.16$	—	.445** $t=2.31$
Urban Democrats	—	-.339* $t=-1.60$	—
Administrative powers	.327*** $t=2.55$	.509** $t=2.41$	.212 $t=1.10$
<i>N</i>	48	20	28
<i>R</i> ²	.259	.288	.179

Note: Coefficients are standardized.

* $p < .10$

** $p < .05$

*** $p < .01$ (See note 4.)

administrative powers brings about a longer waiting period. Among the industrialized states, the influence of urban Democrats leads to a shorter waiting period. In addition, the severity of the farming depression results in a longer waiting period, for the full sample and for the nonindustrialized subsample.

DISCUSSION AND CONCLUSION

These results show where the various theoretical perspectives are weak or strong and how they are limited. Of these perspectives, the performance of state variables was strong across samples and across social policy outcomes; these findings indicate that statist theories must be taken into account in many different settings. The measures based on other perspectives were significant only for specific subsamples and types of social policy outcomes, though usually in a manner consistent with the claims of their proponents. When compared with results from cross-national research, our findings suggest a division of theoretical labor for future research.

Industrialization theory receives here the sort of support that it usually does in cross-national research. The findings for the 48-case models on state spending for relief and the timing of unemployment insurance correspond to some extent with cross-national research, which often finds positive effects on welfare-state measures when rich and poor countries are included in the sample (Jackman 1975). In accordance with cross-national findings on rich countries, industrialization has no effect on the timing of adoption of unemployment insurance or of old-age pensions among the industrialized states (Schneider 1982, p. 208). Because of the theoretical silence on the subject, it is no surprise that industrialization does not influence national relief spending and policy contents.

In other ways, the evidence here is at odds with other findings. On the one hand, the results imply that the industrialization perspective should not be confined to the explanation of spending in large samples. Industrialization explains differences in state relief spending, even among industrialized states, and urbanization has an effect on the passage of old-age pensions. The effect of industrialization on the timing of unemployment compensation for 48 cases has no counterpart in large-sample

cross-national research (Collier and Messick 1975). On the other hand, the results suggest the limitations of the perspective. Notably, the percentage of the aged affects none of the outcomes, not even old-age pensions; the evidence implies that the representation of the aged affects the *expansion* of spending, not initial outcomes.

The support for the logic-of-capitalism model is also mainly along the lines of its claims. First, the indicators of economic downturn frequently influence the outcomes having to do with means-tested programs. It is fruitful to separate means-tested from insurance programs (Pampel and Williamson, forthcoming). Second, the measures of downturn affect several different types of outcomes. For instance, the perspective has implications for the disbursement of federal funds and for the issue of the control of labor, and these receive support in the regressions. Other results fit less well. The model is based on democratic capitalist societies, but the indicators of industrial economic downturn do not perform better in the sample of industrialized states. The problems of legitimacy posed by the perspective are perhaps wider than it assumes.

The performances of the electoral-politics measures appear to fit less well with cross-national findings. The strongest negative evidence concerns the allocation of federal relief. The lack of effect of electoral volatility on federal relief contradicts the research of Wright (1974), who found that a similar measure strongly affected aggregated federal disbursements to states from 1933 to 1940. The Roosevelt administration may have thought that dealing adequately with the problem was more likely to bring reelection. The other influences of electoral competition only appear puzzling, however. For instance, the finding that electoral parity slows the passage of unemployment compensation among the industrialized states seems to contradict cross-national evidence that political participation speeded the passage of unemployment insurance (Schneider 1982). This apparent disparity can be explained by theoretical differences in types of political competition. On the one hand, measures of political participation help to distinguish democratic from undemocratic polities. The existence of democracy should have positive effects on social-policy outcomes; accordingly, political participation increases emer-

agency relief and the average pension among all states. In this sample, undemocratic states of the former Confederacy are combined with democratic ones. On the other hand, partisan electoral parity might indicate a government with powers divided between the major parties, undermining its ability to act quickly (Hansen 1983, chap. 5). This disparity in results also may be due to peculiarities of American unemployment-compensation legislation. That legislation did not cover agricultural labor, and thus the issue was mainly symbolic for nonindustrialized states; in contrast, old-age pensions posed a threat to the coercive, low-wage economic system of the South (Quadagno 1988).

Although findings concerning electoral partisanship are weaker, they are consistent with other research. The measure urban Democrats shortens the waiting period, as expected, only for the sample of industrialized and democratic states. Across the 48 states, Republican support speeds the passage of old-age pensions. Electoral partisanship could be operationalized better: party support is measured, not party rule; the assumptions that, for the industrialized states, the Republicans constituted a right-wing party and the Democrats a center party are less than satisfactory; the dummy variable for urban Democrats is better theoretically, but empirically crude. This problem requires historical research to fit state-level parties into the proper categories (Jennings 1979). In the allocation of federal relief, where there is no measurement problem—Democrats, not centrist parties, should be rewarded, and Republicans punished—partisanship has a negligible influence.

The nonelectoral-politics approach is supported, but the results show the limitations of the perspective. The only dependent measure where social-movement variables apply is the average old-age pension. Two different Townsend variables have a positive influence on this measure. Union density does not. The evidence suggests that social movements can have an influence over the spending on policies *once they are passed*. The results also argue that political action is clearly more important than mere demographic strength. Yet the Townsend movement came into being after more than 20 of the first state-level old-age pension bills had passed. The Townsend plan itself, or anything resembling it, never passed. These facts suggest that social

movements are less important in the initial passage and devising of social-spending legislation.

Finally, our findings show that statist perspectives need to be taken more seriously in quantitative research. Our research design does not favor the statist perspective; the American state is generally perceived as weak and accordingly of little importance in the making of policies. Hence, the performance of statist measures provides strong support for the perspective. What is most notable is the effectiveness of the state measures across outcomes and samples. The influence of fiscal capacities is a case in point. There is a positive effect of a state's fiscal strength on its relief expenditures and among various subsamples of the old-age pensions outcomes. Additionally, the differential influence of the fiscal strength measure fits the literature on policy feedbacks, which emphasizes the influence of fiscal arrangements on spending policies. A comparison of the determinants of the timing of adoption of old-age pensions with unemployment compensation illustrates this point. The results show that fiscal strength influences the timing of adoption of old-age pensions, which used state revenues, and that fiscal strength does not influence unemployment compensation, which did not. The fiscal make-up of the programs affects the relationships; further research should take to heart the recommendations of Wilensky (1981) to examine the influence of taxation systems on spending for individual programs and for all programs.

Similarly, the explanatory strength of the existence of a strong state labor commission reflects on the bureaucratic capacities of the state and on policy feedbacks. That administrative strength influences the timing of unemployment insurance reinforces a study of five American states (Amenta et al. 1987) and constitutes strong support for the perspective, since the administrative powers were generally given before 1929. The effect of administrative strength on the waiting period is also suggested by the policy-feedback perspective because the details of legislation correspond to previous policies. Where it has such powers, the state labor commission, or any equivalent administrative body, is a more important bureau and it has a greater influence in the definition of alternatives. Moreover, in a democratic context, a relatively powerful state bureau can act as a sort

of interest group and has greater leverage in speeding the legislative process and securing larger appropriations. Unfortunately, indicators of this sort are not regularly collected and disseminated by the OECD, and to test this argument cross-nationally requires more than routine data collection.

At the theoretical level, it is important to synthesize the strengths and explanatory powers of the three perspectives. We should consider these alternatives not as mutually exclusive, but as potentially complementary. As research progresses to consider more detailed samples and outcomes, it becomes clear that each perspective has something to offer. But rather than applying all perspectives to all outcomes, researchers should consider employing a division of explanatory labor. Our results suggest that particular perspectives work best for some samples and outcomes and worse for others. Whatever the particular question, researchers should not ignore the statist perspective.

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SOCIAL ORGANIZATION AND PATHWAYS OF COMMITMENT: TYPES OF COMMUNAL GROUPS, RATIONAL CHOICE THEORY, AND THE KANTER THESIS*

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Kanter's (1968, 1972) theory of commitment posits that the mutual identification of individuals and a group emerges from resolving three problems of commitment: continuance of members' participation, their social cohesion, and social control over their relevant conduct. For 30 19th-century communal groups, Kanter found that groups employing commitment mechanisms were especially likely to be successful. A Weberian theory of social organization suggests that a group's basic cultural pattern of social organization shapes its capacity to use mechanisms to promote commitment. By locating Kanter's sample in a phenomenological Weberian typology of utopian communal groups, I found two distinct pathways of commitment associated with the "community" and the "other-worldly sect" as alternative types of communal religious social movements. Rational choice theory explicates how commitment problems are resolved (1) in the community through a pathway of social cohesion stemming from ethnicity; and (2) in the other-worldly sect by social control stemming from a spiritual hierarchy and confession.

Functionalist theory holds that, for a social system to persist, institutional arrangements have to draw individuals into social roles. Rosabeth Kanter (1968, 1972) elaborated this theory by proposing commitment as the link by which individual biographies and group objectives become aligned. For a sample of 30 19th-century American communal groups, Kanter showed that various mechanisms promoting commitment tended to be employed more often by successful groups than by unsuccessful ones. This finding does not imply that all commitment mechanisms are equally viable in all types of groups. Questions remain about whether (and how) overarching cultural patterns of social organization affect groups' capacities to resolve problems of commitment. The present study uses quantitative ideal-type analysis, factor

analysis, and a path model to test a theory about relationships between type of social organization, commitment, and success in communal groups. The results, discussed in terms of rational choice theory, indicate two things. First, not all types of groups have the same capacities to employ commitment mechanisms. Second, successful groups may achieve commitment through cultural structures that shape the relationship between individual and group in fundamentally different ways.

THE COMMITMENT THESIS AND SOCIAL GROUPS

The connection between individuals' actions and the maintenance of a social order has been an enduring issue of social theory (Alexander 1982; Coleman 1986; Collins 1986). Kanter's theory of commitment elaborates Talcott Parsons's (1951; Parsons and Shils 1951) functionalist approach to the problem by positing commitment as the central process by which the personality system and the social system become articulated. For Kanter, there are three basic problems of commitment: (1) *continuance*, involving perceptions that individual interests are sustained by participation; (2) *cohesion*, or individuals' affective solidarity with a group; and (3) *control*, the exercise of group

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authority with moral force, without untoward domination. For each of these commitment problems, social organization affects individuals by both *dissociative processes*, which "free the personality system from other commitments," and *associative processes*, which "attach the personality to the current object of commitment" (Kanter 1968, p. 504). The central hypothesis is that "(s)ystems with all three kinds of commitment, with total commitment, should be more successful in their maintenance than those without" (Kanter 1968, p. 501).

Kanter (1968, p. 500) noted that different types of social systems (e.g., a corporation, a family) may vary in the centrality of one or another commitment problem, but her empirical research on communal groups does not pursue this line of analysis. Instead, it shows that an array of *commitment mechanisms* (specific practices held to build commitment, e.g., eating meals communally) are found more frequently among groups that succeeded, i.e., survived for 25 years. Left unanswered is the question of whether different communal groups face distinctive commitment problems. Nor is it evident whether various commitment mechanisms are mutually independent, either in the pattern of mechanisms adopted in a group or in the distribution of patterns from group to group. Previous studies (Olson 1968; Stephan and Stephan 1973; Hechter 1978, 1983, 1987; Hougland and Wood 1980; Morris and Steers 1980; Knoke 1981) suggested that basic aspects of group structure constrain the possibilities of solidarity. But it is still necessary to systematically theorize the relationships between types of groups, processes of commitment, and group viability. Such an agenda should be pursued on a wide range of organizations, but to permit comparison, I reanalyze Kanter's data on 19th-century communal groups. First I describe five types of communal groups. This typology in turn suggests formal propositions about communal groups' potentialities for resolving problems of commitment. These propositions are tested on Kanter's sample by factor analysis and path analysis.

IDEAL TYPES OF COMMUNAL GROUPS AND COMMITMENT

Utopian communal groups may be defined as groups of three or more individuals, some of

whom are unrelated by blood or marriage, who live in a single household or interrelated set of households and engage in attempts at value achievement not available in society-at-large. This definition does not yet delineate a sociologically coherent pattern of action (cf. Weber [1922] 1977, p. 20). In fact, communal groups differ radically from one another, and understanding their sociological dynamics requires a way of distinguishing their meaningful differences. For this purpose, I draw on a systematic typology based on Karl Mannheim's theory of utopias, which I have used previously to study modern American communal social-movement organizations (Hall 1978, 1987). The typology identifies ideal types in terms of two phenomenological dimensions: (1) orientations toward time; and (2) modes of social enactment in relation to the symbolic construction of reality (see Table 1). Research on contemporary communal groups (Hall 1978, pp. 200-208) showed that the types could be further specified along social and political dimensions. These specified types represent alternative ideal, but objectively possible, overall patterns of communal life. The question of whether these patterns are associated with alternative processes of commitment that affect group viability will be the standard for judging whether the typology is a useful one in the present context (cf. Weber [1922] 1977, p. 213).

There are five ideal types. In the frame of the "natural attitude" in which the world as experienced is taken for granted as real (Schutz [1933] 1967), *communes* are relatively individualistic, pluralistic, and egalitarian associations of family-like solidarity that lack goals of utopian perfection, or even institutional longevity. Second, among types involving a "produced" or socially legitimated symbolic construction of reality, *other-worldly sects* prophesy the apocalyptic end of time in a society at large and gather together

Table 1. Typology of Communal Groups

Mode of Social Enactment	Mode of Organizing Time:		
	Diachronic	Synchronic	Apocalyptic
Natural		Commune	
Produced	Intentional Association	Community	Other-Worldly Sect
Transcendental		Ecstatic Association	

Note: Table from Hall 1978, p. 202.

true believers to create post-apocalyptic "timeless" heavens on earth separated from the "evils" of this world. The rationalistic type, the *intentional association*, promotes principles of pluralism, individual freedom, equality, and justice—all based on the diachronic treatment of time as a commodity, such that the clock coordinates social action. On the other hand, the *community* embraces an egalitarian solidarity and shared ideology of the "many who act as one," temporally mediated through communion in the "here and now." Third, in the "transcendental" mode of social enactment, a natural or produced enactment is suspended in favor of the *ecstatic association*—a group dedicated not to reformation through doctrine, philosophy or rational scheme, but to "breaking out" of ordinary reality by orgiastic celebration or meditation. (On the typology, see also Appendix, section 1.)

How do the different types of communal groups resolve problems of commitment? This question can be addressed for each of Kanter's three commitment problems—continuance, cohesion, and control—in relation to both "dissociative" processes (which free individuals from nongroup commitments) and "associative" processes (which bind individuals to the group). Empirical cases will vary, but the consequences of each type can be explored in strictly theoretical terms (cf. Roth 1971, p. 126). As Table 2 indicates, we may expect certain types of groups to have much greater capacity than others for resolving commitment problems. On theoretical grounds, the commune lacks any substantial capacity to resolve commitment problems. In a pluralistic "natural enactment" of putatively equal "multiple realities," no instituted basis exists for establishing mechanisms of continuance or control, and the problem of cohesion is

resolved, at best, if group participants can sustain family-like communion. This is not an easy trick for individuals who have not nurtured family ties over a long period of time (cf. Abrams and McCulloch 1976, p. 188).

The intentional association has little better chance of success, but for different reasons. Definitionally, the commune involves what Weber termed a "communal" relationship, in which "the orientation of social action . . . is based on a subjective feeling of the parties, whether affectual or traditional, that they belong together." On the other hand, Weber ([1922] 1977, pp. 40–41) viewed "associative" relationships as "based on a rationally motivated adjustment of interests or a similarly motivated agreement, whether the basis be absolute values or reasons of expediency." In the intentional association, commitment is bound up in associative processes tied to rationally calculative investment and individuals' limited "surrender" to social control within the framework of agreed-upon goals. This "organic solidarity" (Durkheim [1893] 1933) does not lend itself to resolving broader problems of group cohesion, and it can offer its participants no compelling justification for undergoing mortification in submission to social control.

Like the intentional association, the ecstatic association is based on associative rather than communal relationships. But there is a crucial difference: in the ecstatic association, associative relationships involve an absolute value—the pursuit of transcendence—which requires significant face-to-face interaction. Thus, the ecstatic association may be postulated to engender more communion than the intentional association, where the clock coordinates individuals often disjointed in time and space. In addition, pursuit of transcendence requires a somewhat greater renunciation of

Table 2. Theorized Capacities of Types of Communal Groups to Resolve Commitment Problems

Type of Group	Commitment Problem						Total
	Continuance		Cohesion		Control		
	Sacrifice (D)	Investment (A)	Renunciation (D)	Communion (A)	Mortification (D)	Surrender (A)	
Commune	—	—	—	+/-	—	—	7
Intentional association	—	+/-	—	—	—	+/-	8
Ecstatic association	+/-	+/-	+/-	+/-	—	+/-	11
Community	+/-	+	+/-	+	+/-	+/-	14
Otherly-worldly sect	+	+	+	+	+	+	18

Note: D: dissociative process of commitment; A: associative process of commitment (Kanter 1968, p. 504).
 — = 1 = low, +/- = 2 = moderate or indeterminate, + = 3 = high capacity to resolve commitment problem.

extra-group ties. Still, because the value-rational purpose of transcendence, not the group itself, is paramount, cohesion derives only from a shared goal, and its resolution is incomplete. Similarly, because association is the basis of group life, surrender to "mystagogic" authority does not necessarily require surrender in other matters, and submission to social control does not inherently extend to mortification. Finally, in the quest for transcendence, the problem of continuance may well be resolved, not through emergence of a relatively stable set of participants, but through the capacity of an inner circle to recruit a succession of other persons who pass through the group (cf. Troeltsch 1932, p. 378).

Both the community and the other-worldly sect have substantially greater capacities than other groups to resolve problems of commitment. As types, the two are similar: the community is established on a totally communal basis, which nevertheless does not require renunciation of the historical world or individuals' previous connections to it. For the other-worldly sect, an apocalyptic time does not necessarily increase the communion founded in the here and now of the community, nor can it command greater than the total investment required of the community's participants. But an apocalyptic time legitimates prophets who call on their followers to make special sacrifices, to renounce the "evils" of this world and submit to the total social control of the group, which acts to fulfill God's will on Earth. In this light, the imposition of sexual mores, ascetic practices, mutual criticism, and other commitment mechanisms seems especially tenable in the other-worldly sect. Compared to the intentional association or the commune, the community has a substantial basis for resolving all three problems of commitment, but the other-worldly sect resolves the problem of total commitment.

Some types of groups face especially formidable problems of commitment, whereas others seem advantageously positioned organizationally to solve commitment problems. If the commitment mechanisms described by Kanter are aspects of social organization, comparative ideal type and case analysis offers a frame for Kanter's variable analysis. What is the significance of such a seemingly technical shift in method? A null hypothesis would suggest that problems of commitment

are basically the same for all communal groups, that tendencies to resolve commitment problems by employing the diverse commitment mechanisms are independently variable (cf. Kanter 1968, p. 500), and that comparative analysis across types of groups will add no new information. My hypothesis, in contrast, is this: since alternative types of communal groups have unequal capacities to resolve problems of commitment, some groups—notably ones approximating the other-worldly sect and to a lesser degree the community—are more likely to be successful than others. If communal groups cluster according to ideal type with respect to their "mixes" of commitment mechanisms, it will tend to substantiate my theoretical analysis, which suggests that commitment-building processes represent broad alternative pathways structured by overarching patterns of social organization.

METHODOLOGY

What are the empirical relationships between communal groups, their commitment processes, and their success? I addressed this question by reanalyzing Kanter's sample of groups with the following overall strategy. First, I specified the ideal types of communal groups in terms of dummy variables that reflect key theoretical dimensions of variation among them. I then used the same dummy variables to measure the degree to which each of the groups in the sample approximated each of the ideal types. Second, I treated Kanter's nominal level measurements of commitment mechanisms in communal groups as interval level dummy variables. I subjected a matrix of commitment-mechanism variables to *R*-type factor analysis to reduce the matrix to a set of empirical "commitment factors," for which I could calculate factor scores for each communal group. Then I used the two sets of measures—group approximations to ideal types and group commitment-factor scores—along with a measure of group success in multiple regression and path analysis.

The Sample

Included in the analysis are the 30 19th-century American communal groups that Kanter studied. Kanter (1968, p. 503) identified groups for which at least two independent sources of information were available and

Table 3. Specification of Ideal Types of Communal Groups

Dichotomous Variable	Ideal Type				
	Commune	Intentional Association	Community	Other-Worldly Sect	Ecstatic Association
<i>Temporal Mode</i>					
1. Diachronic Synchronic ^a	Yes	Yes	Yes		Yes
2. Apocalyptic				Yes	
<i>Enactment Mode</i>					
Natural ^a	Yes				
3. Produced		Yes	Yes	Yes	
4. Transcendental					Yes
<i>Social Relations</i>					
5. Egalitarianism	Yes	Yes	Yes		
6. Pluralism	Yes	Yes			

^a Redundant variable omitted in analysis.

constructed the sample on a purposive, nonrandom basis. Practically all groups that survived for more than 25 years were included; the sample's more short-lived groups represent all major social movements and 19th-century time periods. Since Kanter's sample is not random, I use statistical procedures only for descriptive, rather than inferential, purposes. Nevertheless, because a wide range of groups is included, descriptive statistical analysis can reveal something generally about processes of commitment, their empirical bases, and effects. This is the assumption on which Kanter's original study is based, and much quantitative research depends on the same assumption (Haas 1982).

Measurement

I measured communal group success by the same dummy variable used by Kanter (1972, p. 245): "survival for at least twenty-five years, the sociological definition of a generation." By this criterion, 21 groups, lasting from 6 months to 15 years, failed, while 9 groups, surviving from 33 to 184 years, succeeded (Kanter 1972, pp. 246-48).¹

¹ Statistical analyses were also carried out using an interval-level measure of success—years of existence. The results were slightly different than those reported here, yet would not have required any different interpretation. Because distribution of groups' years of existence was skewed, the interval measure gave undue statistical weight to certain cases (e.g., the Shaker colonies, which endured for 184 years) and to variables (e.g., the homogeneity commitment factor) on which outlying cases were differentially loaded. Kanter chose the 25-year

Measuring group approximations to ideal types and group commitment-factor scores involved more elaborate procedures.

Communal group approximations to ideal types. The five ideal types of communal groups were theoretically specified with six dichotomous variables. These included four variables reflecting the two dimensions (orientation to time and mode of social enactment) by which the typology of communal groups was generated and two variables describing basic aspects of social relationships (egalitarianism and pluralism) that further specified the original typology (Hall 1978, pp. 200-208) (see Appendix, section 2). The approximation (i.e., degree of similarity) of each empirical communal group to each ideal type of group was specified in terms of the same six variables (see Appendix, section 3). In other words, I compared the observed characteristics of each group to the theoretical characteristics of each ideal type (see Table 4). This was done on an additive linear scale using the G Index of Agreement (Holley and Guilford 1964), a coefficient that has the properties of, and may be treated as, an interval-level correlation coefficient.² With the G Index, a greater

break point for the success variable to focus on processes promoting initial generational survival of a communal group. Using this approach in my study both maintains continuities with Kanter's study and, by avoiding excessive statistical influence of exceptionally long-lasting groups, yields a more stringent test of hypotheses about success than would an interval measure.

² The G Index of Agreement is calculated by the subtraction of the proportion of *noncorresponding* characteristics for any two cases (one "yes," the

Table 4. Dichotomous Variable Values and G Indices of Agreement of Communal Groups with Ideal Types

Nineteenth century Group	Dichotomous Variables	G Index with Ideal Type				
		Commune	Intentional Association	Community	Other-Worldly Sect	Ecstatic Association
1. Zoar	- - + - + -	.333	.333	1.000	.333	.333
2. Amana	- - + - - -	.000	.000	.667	.667	.667
3. North American Phalanx	+ - + - + +	.333	1.000	.333	-.333	-.333
4. New Harmony	+ - + - + +	.333	1.000	.333	-.333	-.333
5. Saint Nazianz	- - + - + -	.333	.333	1.000	.333	.333
6. Yellow Springs	- - - - + +	1.000	.333	.333	-.333	-.333
7. Kendal	+ - + - + +	.333	1.000	.333	-.333	-.333
8. Bishop Hill	- + + - + -	.000	.000	.667	.667	.000
9. Harmony Society	- + + - + -	.000	.000	.667	.667	.000
10. Oneida	- + + - + -	.000	.000	.667	.667	.000
11. Hopedale	+ - + - + -	.000	.667	.667	.000	.000
12. Northampton	+ - - - + +	.667	.667	.000	.000	-.667
13. Wisconsin Phalanx	+ - + - + +	.333	1.000	.333	-.333	-.333
14. Shakers	- + + - - -	-.333	-.333	.333	1.000	.333
15. Fruitlands	- - + + + -	.000	.000	.667	.000	.667
16. Brook Farm	+ - + - + +	.333	1.000	.333	-.333	-.333
17. Preparation	- - - - - -	.333	-.333	.333	.333	.333
18. Jasper Colony	- - + - + -	.333	.333	1.000	.333	.333
19. Blue Spring	- - + - + +	.667	.667	.667	.000	.000
20. Iowa Pioneer Phalanx	- - + - + +	.667	.667	.667	.000	.000
21. Order of Enoch	- + + - + -	.000	.000	.667	.667	.000
22. Modern Times	+ - + - + +	.333	1.000	.333	-.333	-.333
23. Oberlin	- - + - + -	.333	.333	1.000	-.333	-.333
24. Communia	+ - + - + +	.333	1.000	.333	-.333	-.333
25. Snowhill	- + + - + -	.000	.000	.667	.667	.000
26. Bethel and Aurora	- - + - + -	.333	.333	1.000	.333	.333
27. Skaneateles	- - - - + +	1.000	.333	.333	-.333	-.333
28. Nashoba	+ - + - - -	-.333	.333	.333	.333	.333
29. Jerusalem	- - + - - -	.000	.000	.667	.667	.667
30. Utopia	+ - + - + +	.333	1.000	.333	-.333	-.333

Note: Dichotomous variable values for each group are listed in order corresponding to Table 3.

number of shared characteristics between a group and an ideal type is reflected in a higher positive coefficient of correlation. Note that ideal types and groups as cases, not variables, are correlated with each other.

Commitment factors. Forty-seven of Kanter's original commitment-mechanism variables that had substantial amounts of missing data were eliminated from the analysis. I then applied an *R*-type oblique-factor analytic procedure to the remaining matrix of 46 commitment-mechanism variables. There was considerably less than random variance among these variables, or, to put it differently, certain variables were practically redundant with one another. Indeed, the factor space spanned by these variables was only 13; that is, the factor analysis essentially involved a reduction of the data matrix that produced 13

empirically derived, but theoretically interpretable commitment factors, which together reflect 100 percent of the variance in the matrix of 46 commitment variables. In this solution, none of the factors is correlated with another at a level of greater than $+/- .27$. Table 5 lists the factors, names them, and indicates commitment-mechanism variables that were highly loaded on the factors in the factor-pattern matrix (cf. Rummel 1976, p. 399-401). Though the empirical-commitment factors sometimes combine more than one dimension of commitment theorized by Kanter, the important point is that each process of commitment continues to be represented after reduction of the 46-variable commitment-mechanism matrix to a smaller matrix of commitment factors reflecting its total variance. For each of the factors, commitment-factor scores of each communal group were calculated by the complete estimation method and used in subsequent analysis to reflect the

other, "no") from the proportion of *corresponding* characteristics of the two cases (both "yes" or both "no").

Table 5. Commitment Factors and Commitment-Mechanism Variables with Factor Pattern Loadings

Factor Name	Commitment Mechanisms with Highest Loadings
1. Privileged leader	leadership immunities [.803]; special address for leaders [.788]; leadership prerogatives [.724]; clothing owned by community [.600]
2. Ethnicity	common ethnic background [-.948]; foreign language spoken [-.936]
3. Social communalism	communal dining halls [.762]; land owned by community [.636]
4. Financial contribution	financial contribution for admission [.719]
5. Religious colony	community derived from prior organization or group [.824]; outside perceived as evil and wicked [.692]; common religious background [.609]
6. Oligarchy	top leaders were founders or named by predecessors [-.699]
7. Spiritual hierarchy	formally structured deference to those of higher moral status [.874]; members distinguished on moral grounds [.838]
8. Ideological order	furniture, tools, equipment owned by community [.513]; personal conduct rules [.512]; commitment to ideology required [.466]; clothing and personal effects owned by community [.433]; ideology a complete, elaborated philosophical system [.403]
9. Religious communalism	demands legitimated by reference to a higher principle [.859]; no charge for community services [.755]
10. Non-monogamy	free love or complex marriage [.652]
11. Acquaintance	prior acquaintance of members [.733]
12. Confession	regular confession [.713]; confession on joining [.684]; slang, jargon, other special terms [.675]
13. Homogeneity	uniform style of dress [-.700]

Note: All commitment variables with loadings of $\pm .600$ or greater are listed in order of decreasing magnitude, with all loadings of $\pm .400$ or greater listed for factors otherwise uninterpretable. To avoid the confusion of double-negatives, factors 2, 6 and 13 were named in relation to the highly loaded negative variables, and the signs associated with these factors were reversed in subsequent tables. This consistent labeling convention was introduced after the fact and had no effect on statistical analyses.

groups' commitment processes (see Appendix, section 4).

Method of Analysis

Measurement procedures yielded three kinds of variables, with values for each communal group: (1) the G Index degree of approximation to each ideal type; (2) commitment-factor scores on each of 13 factors; and (3) a dichotomous measure of success (Hall 1988). Given these variables, evaluation of the study's hypotheses was relatively straightforward. For Kanter's hypothesis that commitment-building mechanisms have a positive effect on group success, the commitment factors were included in a multiple-regression analysis with success as a criterion variable.

My hypothesis holds that alternative types of groups have different propensities to employ commitment mechanisms, and thereby succeed or fail. Since this hypothesis argues that overarching types of social organization are causally prior to commitment factors, I evaluated the hypothesis in a two-stage path-analytic model, with success as the dependent variable regressed on all other variables and commitment factors regressed

on group approximations to ideal types. I then evaluated a series of stepwise regression equations. A commitment factor was retained for the path model if it contributed greater than 5 percent additional variance explained when included in a stepwise multiple regression of all commitment factors, with success as the dependent variable. On this basis, four commitment factors—ethnicity, spiritual hierarchy, confession, and homogeneity—were retained. The same 5 percent criterion was applied in stepwise multiple regressions including all ideal-type approximation variables, with each of the four selected commitment factors as dependent variables. Two ideal types—the community and the other-worldly sect—met the criterion for inclusion in subsequent analysis. Multiple-regression equations and standardized beta weights were calculated for a just-identified two-stage path model with the retained variables (Land 1969, p. 34) to determine the relative significance and causal interrelations among approximations to ideal types of communal groups, commitment factors, and success.

SOCIAL STRUCTURE, COMMITMENT AND GROUP PERSISTENCE

My analysis supports Kanter's theory that

resolution of commitment problems contributes to group success, and it establishes the relative importance of the commitment factors. Beyond Kanter's thesis, my hypothesis gains strong support: the prevalence of particular commitment-producing strategies seems to derive in part from basic differences in social organization. Certain types of communal groups—the community and, especially, the other-worldly sect—are relatively successful.

Commitment and Success

Four commitment factors—ethnicity, spiritual hierarchy, confession, and homogeneity—explain 67.1 percent of the variance in group success (see Table 6). Addition of any of the nine other commitment factors to the equation adds less than 5 percent to the variance explained. Possibly, some of the nine less significant factors reflect processes that resolve commitment problems in one group or another, while failing to differentiate the sample as a whole. But in terms of the entire sample, only the four major commitment factors are consistently decisive. Each relates to the theory of commitment that Kanter (1968, p. 501) described. Two—ethnicity and homogeneity—are tied to the commitment problem of cohesion, and two—confession and spiritual hierarchy—to that of social control.

For social cohesion, ethnicity is a historically given attribute of group composition that promotes an *associative* commitment process of communion, grounding the collective feeling, as Weber put it, of belonging together. An "ethnic boundary" (Barth 1969) differentiates group members from other individuals, establishing the grounds for deriving identity, status, and rewards from participation. The second important factor tied to social cohesion—homogeneity—re-

flects a *dissociative* commitment process, renunciation of individualism, marked by the factor's highly loaded variable, a uniform style of dress.

The other two commitment factors strongly correlated with group success—confession and spiritual hierarchy—relate to the problem of social control. Confession, tied to the *dissociative* process of mortification, inhibits individuals from covertly maintaining attitudes and practices that would be considered alien. It subjects the thoughts and actions of individuals to public scrutiny. The mortification of individuals by this process is considerable: the self is sacrificed to a public cognitive reality through organized ritual action. The second social-control commitment factor—spiritual hierarchy—seems more closely linked to the *associative* commitment process of surrender (or transcendence [Kanter 1972]): members are distinguished on moral grounds, and those of higher moral status receive deference.

If a spiritual hierarchy represents surrender (Kanter originally classified it as mortification), the four commitment factors that best predict group success represent dissociative and associative processes of cohesion and social control, the commitment problems that Kanter (1968, p. 501) suggested are of a higher order than the problem of continuance. Continuance commitment processes—individual sacrifice and investment—may be necessary, but they do not seem sufficient to establish a group on a successful basis.

Considering all commitment factors in one regression equation consolidates Kanter's separate measurements of commitment mechanisms in a way that more directly tests her original theoretical formulation concerning the total problem of commitment. Commitment does seem to involve analytically distinct processes that are functionally necessary for group success. Among 19th-century communal groups, these processes are parsimoniously summarized by four commitment factors: homogeneity and ethnicity as social cohesion, and confession and spiritual hierarchy as social control.

Types of Communal Groups, Commitment, and Success

The question remains: do alternative types of communal groups possess differential capacities for resolving commitment problems

Table 6. Multiple Regression of Commitment Factors with Success

Commitment Factor	Partial Correlation	Standardized Beta with Success
Ethnicity	.601	.447
Spiritual Hierarchy	.515	.358
Confession	.425	.295
Homogeneity	.460	.320
Multiple R	.819	
R ²	.671	

measured by the four major commitment factors associated with success? This question can be addressed by examining a path model constructed from (1) beta weights of the two ideal-type approximation variables when each of the four major commitment factors is used as a dependent variable; and (2) beta weights of group ideal-type approximation variables and commitment factors as independent variables when success is used as a dependent variable. The model (see Table 7) lends support to the hypothesis of Table 2 that the other-worldly sect and, to a lesser degree, the community have stronger capacities than other types of groups for resolving commitment problems.

The community and the other-worldly sect as types of communal groups account for a little more than 15 percent of the variance in commitment processes of homogeneity, ethnicity, and confession, and a little more than half of the variance in spiritual hierarchy, but the pattern is not the same for the two types. Approximation of a group to the other-worldly sect as a type strongly promotes homogeneity, whereas approximation to the community tends a bit more toward encouraging heterogeneity. Similarly, the other-worldly sect tends to employ confession as a vehicle of mortification, whereas whether a group approximates the community as a type says very little about its tendency to employ

confession mechanisms. Further, the other-worldly sect very strongly favors spiritual hierarchy, whereas the community has a rather strong tendency in the opposite direction. Only with respect to the commitment process of communion is the community notably associated with a factor, ethnicity, that is decisive in contributing to the persistence of communal groups. The other-worldly sect is associated with all four commitment factors and with one of them, the existence of a spiritual hierarchy, quite strongly.

In turn, when both the approximations of groups to the two ideal types and the commitment factor scores are included as independent variables in a multiple regression with success as the dependent variable, the existence of spiritual hierarchy is the best single predictor, followed in order of beta-weight magnitude by ethnicity and homogeneity. Combining multiple-regression analyses using the two kinds of dependent variables, commitment factors and success, yields a comprehensive just-identified path model (i.e., including all beta weights given in Table 7). The total causal path of each ideal type to success may be calculated as its direct path (i.e., standardized beta weight) to success plus the sum of all indirect paths to success (namely, the path from a type to a commitment factor times the commitment

Table 7. Multiple Regressions for Path Model of Communal Group Success

Dependent Variable	Independent Variable	Partial Correlation	Standardized Beta with Dependent Variable	Multiple R	R ²
Homogeneity [Renunciation]	Community	-.257	-.278	.412	.170
	Other-worldly Sect	.410	.471		
Ethnicity [Communion]	Community	.277	.298	.435	.189
	Other-worldly Sect	.192	.202		
Confession [Mortification]	Community	-.065	-.069	.399	.159
	Other-worldly Sect	.377	.428		
Spiritual Hierarchy [Surrender]	Community	-.412	-.344	.750	.562
	Other-worldly Sect	.748	.857		
Success	Community	.418	.316	.858	.737
	Other-worldly Sect	-.106	-.116		
	Homogeneity	.495	.356		
	Ethnicity	.510	.368		
	Confession	.445	.284		
	Spiritual Hierarchy	.444	.413		

factor's path to success). The total causal path to success of the community as an ideal type is .165, while that of the other-worldly sect is .434. Moreover, the strongest single basis to predict the success of the community is by the direct path, that is, by aspects of the community unrelated to the commitment factors in the model. As a type, the community is negatively associated with all of the commitment factors aside from ethnicity, and ethnicity represents a preexisting fact of group composition that grounds commitment, rather than an adopted strategy. By contrast, communal groups that approximate the other-worldly sect are more likely than communities to be successful, and this tendency results from the other-worldly sect's capacity to involve all four commitment factors that, taken together, are strongly associated with group success.

TWO PATHWAYS TO COMMITMENT

Kanter (1968, p. 504) suggested that, in theory, there might be functionally equivalent ways in which commitment problems are resolved. My analysis shows distinctive causal pathways of commitment at work in the two successful types of communal groups—the community and the other-worldly sect. Insofar as the community's success depends on processes measured by the four major commitment factors, commitment of members is basically grounded in the process of communion, through ethnicity. Apparently, ethnicity grounds formation of a bounded status group, the social and economic benefits of which are restricted to members (Weber [1922] 1977, p. 387; Barth 1979). But ethnicity also seems to limit the capacity of a group to invoke other commitment-building processes associated with success. As Weber ([1922] 1977, p. 391) observed, "The sense of ethnic honor is a specific honor of the masses, for it is accessible to anybody who belongs to the subjectively believed community of descent." As a form of solidarity based on the "lowest common denominator" (Simmel [1912] 1950) of a cultural marker, ethnicity would tend to rule out requirements that compel conformity of participants on bases narrower than the group boundary badges of membership. In other words, communion is sustained by the "leveling" sentiment of ethnicity, which in turn delimits the extent to which social

control can be established in a spiritual hierarchy and confession. The community thus resolves or fails to resolve commitment problems largely on the basis of the communion flowing from ethnic solidarity.

How then does the community deal with the problem of social control? More specifically, how does the community resolve the "free-rider" problem (Olson 1968) of individuals deriving benefits from a public good without contributing to its maintenance? We have seen that the egalitarian ethos of the community does not lend itself to emphasis on hierarchy. Given this limit on a potent basis of social control, free-riders would seem to pose a significant threat to a collective economy and shared work ethic (as indeed happened in groups like Robert Owen's New Harmony). In the absence of a spiritual hierarchy, monitoring of compliance to group requirements cannot so easily follow the typical route (Hechter 1987), in which "principals" with the highest stakes in a group enforce the relevant conformity of others in work, consumption, and social life. But, employing Hechter's framework, it can be argued that an alternative regimen of monitoring can be instituted in the community, such that the need for hierarchical social control is lessened. Given the "mass" or egalitarian basis of the community, each participant can in principle claim equal material and social benefits. On this basis, *all* members have at least some interest in monitoring others to protect their own benefits. These diffuse interests in monitoring are probably not so pronounced as those of a narrower set of presumably more privileged principals in a less egalitarian group. But diffuse monitoring interests among the mass of participants may make monitoring, and thus social control, more pervasive group processes that effectively permeate all social strata of the group.

The circumstances of the other-worldly sect are quite different. They derive from the call away from this world, to establish a "heaven-on-earth" of the "elect." Independently of any putatively ethnic basis of communion, the capacity to promote social cohesion by enforcing the renunciation of significant extra-group ties may be derived from effective social control. Here, the other-worldly sect is better positioned than the community. If the members of an other-worldly sect recognize the legitimacy of their group's

prophecy, the principle of a spiritual hierarchy is not difficult to establish. Experimental laboratory research (Marwell and Ames 1979) suggests that investment in a public good most likely occurs in small, unequal groups. In a parallel way, a spiritual hierarchy in the other-worldly sect is based on the principals' moral standards, which negatively assess individuals who act in ways perceived to threaten the material and social enterprise and reward individuals who comply with group expectations. This distribution and denial of religious benefits represents what Weber ([1922] 1977, p. 54) called the "psychic coercion" of "hierocratic domination." For it to succeed, the individual must abandon personal value standards and embrace the socially legitimated standards that define grounds of spiritual deference. In this light, confession and a spiritual hierarchy are two sides of group social control. A spiritual hierarchy identifies principals charged with monitoring relevant conduct and legitimates group standards they use to confer rewards and punishments. Ritualized confession in turn offers one basis on which the relatively privileged principals enact social control, i.e., by monitoring individual commitment to group values and behavioral requirements.

Yet if social control is the strong suit of the other-worldly sect, cohesion remains an awkward problem. The very principle of spiritual hierarchy contravenes ethnicity as a basis of communion, for the group is formed from the elect. The other-worldly sect is thus antagonistic to the leveling involved in mass participation. Under such conditions, social cohesion must be promoted on another basis than ethnicity. One possible avenue invokes the asceticism involved in the self-sacrifice to a transcendent religious cause as a basis of homogeneity, for example, through the wearing of uniforms. Thus, homogeneity in the other-worldly sect is a *dissociative* process of social cohesion that can substitute for a less than complete *associative* process of cohesion. Over the long run, enforcement of homogeneity through such "outer" cultural markers can promote the cohesion of a surrogate ethnicity.

CONCLUSION

Each of the 19th-century communal groups studied by Kanter has a distinctive cultural structure of social organization that forms a

more or less consistent basis of meaningful group life. The differences between their social organization seem substantial enough that alternative types of communal groups cannot be considered equivalent social systems having, in principle, equal chances of resolving the various functional problems of commitment. To the contrary, groups that approximate one or another ideal type had different historical trajectories that constrained or enhanced their ability to resolve problems of commitment. Groups that approximate the commune and the intentional association—the Owenist groups, the Fourierist phalanxes, groups founded on personal friendship, and a smattering of anarchist and socialist endeavors—do not seem to have been capable, on average, of resolving such problems, and they were short-lived. Given that few groups in the sample approximate the ecstatic association as a type, we can say nothing empirically about commitment in such groups. The question might more fruitfully be posed for recent countercultural groups, studied most comprehensively by Zablocki (1980).

Unlike the unsuccessful American communal groups of the 19th-century, the ones that persisted at least 25 years were religious social-movement organizations. Some were religious communities of colonization fleeing persecution in Europe, often interpreting their migrations in apocalyptic terms. Others were native American religious movements, sometimes, like the Mormons, as apocalyptic as the European ones. Whether immigrant or native, the groups mirrored the classic ideal types of church and sect formulated by Troeltsch (1932) and typologically delineated by Weber (1977, p. 1164). In groups approximating the community, on the one hand, ethnicity, community, and religion were but different facets of a "leveling" church-like organization where the blessings of salvation were in principle available to all. Though such groups were always religious, religion did not always dominate group life; sturdy faith, rather than explicit theology or extensive religious organization, was the order of the day. On the other hand, in the other-worldly sects among the 19th-century groups (and, as Troeltsch and Weber suggested, in sects in general), a regimen based on a clearly delineated spiritual revelation was strictly maintained. Participants' commitment was enhanced through procedures of

confession that discerned their qualification to live and work in a community of the elect set apart from an alien and evil world.

This study suggests two distinctive pathways of commitment deriving from alternative cultural structures of social organization, that of the community, keyed to social cohesion via ethnicity, and that of the other-worldly sect, directed to social control through hierocratic domination. Ethnicity and religion long have been recognized as the important sources of communal group persistence. I argue that we can explain these patterns by identifying a pathway of commitment attached to each source of persistence. In future research, it remains to be seen whether the diffuse and hierarchical monitoring explanations attached to the two pathways have wider application. In general, the study of the two pathways in other contexts and the construction of similar models may offer a useful basis for tying rational choice explanations to patterns of social structure. In the study of organizational commitment, the identification of pathways offers a foundation for further research. The two pathways are distinctive and even logically incompatible, but they are not necessarily mutually exclusive. To the contrary, it may be that when organizations combine ethnicity and sectarian hierarchy, they enhance commitment beyond that sustained by either logic in itself. Such a possibility seems both theoretically significant and relevant to modern social movements, but its investigation lies beyond the focus of this study.

APPENDIX

Section 1. The typology of communal groups has empty cells that result from the synchronic temporal mode's subsumption of other temporal possibilities in the natural and transcendental modes of social enactment. The commune involves an episodic pluralism of times, while the ecstatic association transcends all cognitive elaborations of time (Hall 1978, p. 16). In the construction of typologies, dimensions are not necessarily independent of one another; as Parsons (1951, pp. 152ff.; cf. Stinchcombe 1968, p. 47) recognized in a similar context, some combinations of elements seem more sociologically coherent than others. An additional type from the original typology, the preapocalyptic warring sect, is not treated in the present analysis because the sample does not include any groups that approximated it.

Section 2. The five ideal types and the thirty communal groups were specified on the basis of

the following questions. *Diachronic time:* Did the group calculate members' labor contributions in terms of objective temporal measurements and either pay them wages or credit them with having fulfilled their labor obligations on the basis of accumulated credits? *Apocalyptic time:* "Did the group have a well developed theory of the end of history, in which members considered themselves as existing or paving the way for existence beyond 'this' world, in an exclusive heaven-on-earth of the chosen or saved?" *Produced enactment:* "Did the group share some basic philosophy from which the form of communalism derived (rather than simply holding out a vague ideal of communalism, or living together principally as friends, family, or for convenience)?" *Transcendental enactment:* "As a central group activity, did group participants try to attain a mystical, symbolically transcendent form of consciousness and act in terms of that 'vision'?" *Egalitarianism:* "In principle, aside from a brief novitiate, did the members of the group de-emphasize status distinctions and deference, even when people differed in skills or spiritual development, by trying to treat people equally?" *Pluralism:* "Even if the group shared an overall philosophy as a basis for collective life, in general did the group and its members tolerate individual differences in viewpoints and beliefs and seek to accommodate a variety of members?" The specification of ideal types with these variables follows the logic of Max Weber's methodology, applied to quantitative analysis (Murphy and Mueller 1967, p. 14; Bailey 1973; Hall, 1984a, 1984b). Types may be more or less similar, and actual communal groups may approximate one or more types to a greater or lesser degree (cf. Weber [1922] 1977, p. 20). It would be possible to specify the typology by any number of variables reflecting clear theoretical characteristics of the types, ranging upward from the minimum number necessary to define the conceptual space of the typology (in the present study, four variables). Using six variables is a compromise between refining the typology and limiting type specifications to variables that do not reflect specific commitment mechanisms measured by Kanter.

Section 3. For the approximations of groups to ideal types, characteristics of cases were specified in terms of the above questions, based on examination of the historical sources cited by Kanter (1972, p. 270ff.). Values derived in this manner were crosschecked with selected variables Kanter had measured but had not defined in the original study as commitment mechanisms. To provide a stringent test of the present hypothesis, cases were identified as involving apocalyptic time only if this temporal orientation was *central* to group life. Thus, there were some groups which shared a sense of apocalypse as a basic tenet of Protestantism, but no group action became predicated on it in any substantial way. While the

question of type-approximation validity ultimately turns on complex issues of historical interpretation that remain open by definition, the present specification of case approximations to types can, at a minimum, be regarded as reliable, both with respect to Kanter's original study and in terms of the consistency of categorization decisions across groups. One specification question, diachronic time, substantially recreated a variable, "communitistic labor, no compensation for labor," used by Kanter to reflect a commitment mechanism, and the commitment-mechanism variable was not included in the matrix subjected to factor analysis.

Section 4. Kanter's original analyses are based on subsamples of communal groups that vary from nine to the full sample of thirty cases, depending on the amount of missing data about a given commitment mechanism. The difference of means tests apparently (Kanter 1972, p. 505) were calculated for indices that combined individual commitment-mechanism variables based on different subsets of the overall sample. Kanter's quantitative analysis thus is based on the assumption that the tendency for a group to employ or fail to employ different commitment mechanisms within a subset is uncorrelated with its propensity for missing data. Because there were substantial missing commitment-mechanism data in Kanter's original study, if all cases and all variables had been used in the present study, the resulting correlation coefficients for the factor analysis, like Kanter's difference of means tests, would be based on substantially different subsets of the sample. To resolve this problem, a commitment-mechanism variable was eliminated from the analysis if data for over four of the thirty groups (13.3 percent) was missing. On this basis, 46 variables, still representing all dissociative and associative processes of commitment, remained for analysis. Of the 46 variables, 12 had no missing values, 16 had one missing, 7 had two, 7 had three, and 4 variables had four missing values, for an average percentage of missing data of 4.86 percent. In the calculation of zero-order correlation coefficients for factor analysis, a case was eliminated from the computation of a given coefficient if its value for either variable was missing. This procedure maximizes the use of data in calculating coefficients without estimating values for missing data.

The 46 variables were subjected to *R*-type factor analysis using an oblique rotation procedure. The requirement of orthogonality was relaxed because there was no reason to assume that different empirical factors of commitment were uncorrelated with one another, and since the purpose of factor analysis in this study was to produce factors that reflected empirical variance (rather than to maximize the variance explained with each successive factor) (Rummel 1976, p. 386ff.). A series of factor analyses, using different delta values (specifying the degree of obliqueness among

factors) was performed, and, by inspection, I determined that a $\delta = -.5$ provided a solution under which the strength of loadings of commitment-mechanism variables on factors was maximized. With the exception of Factor 8, Ideological Order, all the factors from the solution described are easily interpretable, because only a few commitment-mechanism variables are highly loaded on them, and the highly loaded variables are theoretically related. Because Factor 8 includes variables that are theoretically unrelated, the interpretation is more tenuous. But, in any event, the factor does not figure prominently in subsequent analysis. Factor scores were calculated for each case on each factor by using the complete estimation method, in which a factor-score coefficient for each variable in the analysis is included in the equation. In case of a missing observation for a variable (i.e., on average, for 4.86 percent of the observations), the observation was replaced by the standardized mean of the variable, i.e., zero, so that the resulting factor score is really the sum of nonmissing terms in the equation (Nie, Hull, Jenkins, Steinbrenner, and Brent 1975, p. 489). This is a conservative procedure that reduces a case's factor score, and its contribution to variance, in proportion to the case's number of variables with missing observations.

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REASSESSING ECONOMIC DEPENDENCY AND UNEVEN DEVELOPMENT: THE KENYAN EXPERIENCE*

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Over the past decade, students of development have conducted a substantial number of quantitative cross-national studies. On balance, these studies provide support for some portions of the dependency/world-system theory, showing a negative relationship between foreign capital penetration and both economic growth and equality. However, case studies indicate that the dependency perspective should not be generalized across countries. Individual countries have unique circumstances that govern the level and type of economic dependency affecting them. This paper uses time-series analysis to test the validity of dependency arguments in post-independence Kenya. The results suggest that Kenya is experiencing a transition from classical dependency to dependent development. This process is characterized by an increase in foreign investment in manufacturing, prompting economic expansion in the "modern" sectors of the country. Such uneven development tends to enrich elites associated with foreign capital.

THE STUDY OF INTERNATIONAL ECONOMIC DEPENDENCE: THEORY AND METHOD

Over the last decade, students of development have conducted a substantial number of quantitative cross-national studies. On balance, these studies provide support for some portions of the dependency/world-system perspective, showing a negative relationship between foreign capital penetration and both economic growth and equality (see Bornschier and Chase-Dunn 1985 for a review of this literature). This research has been severely criticized by some scholars, however, who argue that economic dependency

assumes a variety of forms that are unique to individual nations. According to this perspective, researchers should not generalize the findings produced by cross-national studies, as each underdeveloped country has historical circumstances that govern its level of dependence in the world system (see Cardoso 1977; Bach 1977; Irwin 1977; Palma 1978). Moreover, cross-national tests of the dependency/world-system perspective do not facilitate theoretical refinement of this theory; dependency and world-system theories should be reassessed after applying them to different countries.

Critics of quantitative cross-national research stress the need for detailed case studies that appreciate historical specificity and the unique dynamics of the development process. A brief survey of case and regional studies guided by the dependency perspective shows three very different types of economic dependency. First, Frank's early work on Latin America supported "classical" dependency arguments, which claim that foreign capital (in collaboration with local elites) exploited raw materials in this region and inhibited economic expansion (Frank 1967, 1969, 1972). Second, Evans (1979) reassessed dependency theory in the late 1970s because, in sharp contradiction to classical dependency arguments, several highly dependent nations were also experiencing substan-

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tial economic growth. Using Brazil as an example, Evans argued that multinational expansion has created a new form of dependency—"dependent development"—characterized by a triple alliance of foreign capital, local capital, and the domestic state. This type of dependence combines rapid economic development in the "modern" sector with increasing inequality throughout society. Third, Hammer and Gartrell's (1986) recent case study of Canada indicates that a highly developed country can also be dependent on foreign investment. This "mature dependency" will produce a negative long-term association between foreign capital penetration and economic expansion.

In reality, these three types illustrate the changing dynamics of economic dependency in the world system. Although classical dependency once explained conditions in many underdeveloped regions, it no longer fully explains the type of dependency affecting some areas. Because of the internationalization of capital (e.g., expansion of external investment and foreign debt), many classically dependent economies have begun to experience dependent development. Foreign capital increasingly is channeled to the manufacturing sector of some underdeveloped nations, prompting economic growth in their "modern" sectors. This "uneven development" tends to enrich elites associated with foreign capital.

An excellent example is provided by Kenya, a poor peripheral nation (1984 per capita income of \$310) that has remained dependent on raw material exports (87 percent of all exports are primary commodities) and expanded its manufacturing sector through investment by foreign companies (World Bank 1986). Although all sectors of the Kenyan economy have expanded (in real terms) since the mid-1960s, the manufacturing sector has realized the most substantial growth. This sector grew at an average annual rate of over 12 percent between 1963 and 1972, a rate that has declined to about 6 percent since 1972 largely because of high energy costs and international recession (World Bank 1986). Net direct foreign investment in Kenya has increased from \$14 million in 1970 to \$54 million in 1984. Moreover, Kenya's reliance on external loans and aid has increased the nation's long-term debt from \$319 million in 1970 to \$2.633 billion in 1984 (World Bank 1986). Much of

this foreign investment and aid has been directed to manufacturing and other "modern-sector" enterprises (see Holtham and Hazlewood 1976).

This paper examines the changing process of dependency in post-independence Kenya. It is divided into four sections. The first part presents a brief theoretical discussion showing the changing dynamics of economic dependency in the global economy, with a special emphasis on the relationship between foreign capital and local elites. The second part applies the theoretical discussion to the case of Kenya, stressing a sharp debate over the strength of economic and political elites in the country. The third part uses a time-series model to test variables that influence different sectors of the Kenya economy. This is an especially important section because no published study of Kenya has used time-series data to test numerous theories. In fact, quantitative case studies guided by dependency/world-system theories are virtually nonexistent (see Hammer and Gartrell 1986 for an exception). The final part of the paper discusses the quantitative findings and their relevance for general dependency and world-system arguments.

THEORETICAL ISSUES: GENERAL ARGUMENTS

Dependency and world-system arguments have been explicated elsewhere at considerable length and will not be fully repeated here. Before reviewing the case of Kenya, however, it is important to review several fundamental features of economic dependency. Classical dependency theory asserts that underdeveloped nations remain highly dependent because they are penetrated by foreign capital that is invested in raw material extraction. Raw material specialization prevents the internal structural differentiation that is required for sustained development (see Amin 1974, 1976). This exploitative process is perpetuated by an alliance between core-based companies and a small group of peripheral economic and political elites (the "Lumpenbourgeoisie") (Frank 1972). A crucial assumption is that both local capitalists and the peripheral state are entirely dependent on foreign capital. In turn, peripheral governments function "as a local watchdog for core interests" (Delacroix 1980, p. 3).

In an excellent case study of Brazil, Bunker

(1984, 1985) argued that dependency and world-system theories (among others) fail to consider the internal characteristics of countries suffering from unequal exchange. More specifically, the local state may enact policies that facilitate (or inhibit) the exploitative process perpetuated by raw material extraction and unequal exchange. In Brazil, for instance, Bunker (1984, p. 1040) noted that the government has granted resource rights to foreign companies and tax incentives to local companies for the purpose of stimulating "development" in the Amazon. These and other state policies have increased resource extraction from the area and enhanced environmental degradation. The only beneficiaries of such policies are local and foreign capitalists who need the resources supplied by the Amazon. In contrast to classical dependency theory, however, the Brazilian state has not simply been controlled by foreign capital; in fact, it has provided incentives that assist local companies as well as foreign enterprises. Although the Brazilian state enhanced the extractive process in the Amazon, it is clear that a different state policy could have produced different results within the country. Again, internal characteristics vary within countries and affect the dynamics of development in the world system.

Although classical dependency revolves around extractive, export-oriented activities, dependent development occurs when an internal market is internationalized, marking the transformation of economic dependency to "the 'second phase' of imperialism, or 'vertical industrialization' " (Evans 1979, p. 32). More specifically, dependent development became a reality when multinational corporations diversified industrialization throughout the global economy to enhance their profits. Quite importantly, this perspective argues that foreign capital benefits from its association with local business and state elites, but such elites still maintain leverage over the activities of external investment. The triple alliance of foreign capital, local capital, and the domestic state functions well because each institution maintains a certain degree of power.

By transferring industrialization abroad, multinationals have exploited cheap labor and expanded their market to elites in underdeveloped areas. The establishment of this market is not easy, however, and requires collaboration between foreign companies and local

private-sector companies—the "national industrial bourgeoisie" (see Evans 1979). Although multinationals possess the capital and technology to industrialize a new market, they lack commercial organization in these areas. Local firms (usually small-scale industries with limited technological sophistication) already have a well-developed commercial network and understand marketing within their country. Thus, cooperation between foreign and local firms provides the former with local commercial expertise and gives the latter access to capital and technology. This cooperation is especially evident when local elites coordinate and integrate the activities of several multinationals (see Evans 1979, p. 160).

The final actor in the triple alliance is the state, an institution that protects both foreign and local capital. On the one hand, the state may enact import tariffs and other restrictions to protect foreign investment in the country. Moreover, it may follow liberal policies with respect to profit repatriation, providing further incentives for external investment. On the other hand, the state often will side with local (elite) interests if they conflict with multinational interests. For example, if local capital is sufficiently strong to control a particular area of the economy, then the state may deny foreign capital access to this sector. Or, the state will require a joint venture between foreign and local capital, allowing locals a substantial opportunity for profit and control. In short, "[t]he state apparatus must be willing to oppose the multinationals when questions of local accumulation are at stake. Supine comprador states are excluded from the game" (Evans 1979, p. 44).

Dependent-development arguments assert that the triple alliance will enhance "modern-sector" (especially industrial) development in some underdeveloped areas. In contrast to classical dependency theory, this means that foreign capital penetration (e.g., external investment and foreign trade) can facilitate economic growth in some Third World countries. An important qualification, of course, is that this growth will be uneven, that is, it will occur in the "modern" sectors of the economy—sectors that receive foreign capital. This also means that only a small group of industrial and state elites will benefit from foreign capital, increasing income inequality throughout society.

THEORETICAL ISSUES: THE CASE OF KENYA

Economic Considerations

Kenya clearly exhibits some qualities of classical dependency. It is an extremely poor nation that is heavily dependent on raw material exports, especially coffee and tea. It is also an overwhelmingly rural society, as only 15 percent of the population resided in urban areas during 1979, the most recent census year (Republic of Kenya 1981). But Kenya also resembles a country that is making a transition to dependent development. Although foreign investment was once located almost exclusively in the cultivation and processing of agricultural commodities, it now goes mainly to manufacturing enterprises. In fact, since Kenya achieved political independence from Britain in 1963, multinationals have invested heavily in a variety of manufacturing industries. At the same time, indigenous capital has flowed into agricultural activities largely because the new government has prevented foreign firms from purchasing additional land. Although some foreign firms are still involved in primary processing for export, the majority are not (Swainson 1980).

Kenya has long maintained a favorable climate for foreign investment, assuring the right of profit repatriation and pledging not to nationalize foreign assets.¹ This has attracted investment from a wide variety of multinationals. Swainson (1980, pp. 236–38) lists over 40 major foreign firms that have invested in Kenya, and Business International (1980) and Gordon (1984) discuss several others. Among the major multinationals, Coca Cola, Pepsico, and Cadbury Schweppes manufacture soft

drinks; Firestone manufactures tires and rubber products; Delmonte cans pineapples; Singer assembles sewing machines; Esso distributes petroleum; Hoechst and Pfizer manufacture pharmaceutical and health products; Sanyo assembles radios; Bata manufactures shoes; Shell-British Petroleum refines and distributes petroleum; IBM and NCR sell and service business machine products; and General Motors, British Leyland, and Lonrho manufacture motorized vehicles. This is only a partial (but representative) list of foreign companies that do business in Kenya. It should also be stressed that many of these companies are involved in joint ventures with both the Kenyan state and local private capital (see below).

Available data enable us to measure the total amount of foreign capital flowing into Kenya and the total profit repatriated out of the country. Both scholars and government planners are concerned that, because of Kenya's liberal repatriation policies, more international investment income leaves Kenya in the form of profit remittances than flows into the country (see Leys 1975, pp. 137–38). Table 1 illustrates this problem by showing that the inflow of foreign investment often has

Table 1. Comparison of the Inflow of Private Foreign Investment and the Outflow of International Investment Income, 1963–1984 (in millions of Kenyan Pounds)

Year	Inflow	Outflow
1963	–5.8	9.2
1964	–15.3	9.8
1965	1.5	9.0
1966	1.0	12.5
1967	8.9	13.8
1968	9.0	14.2
1969	13.0	9.5
1970	14.9	8.1
1971	17.0	8.8
1972	15.3	12.3
1973	31.3	35.7
1974	41.6	36.1
1975	14.7	35.4
1976	62.3	57.5
1977	48.0	65.5
1978	58.8	74.4
1979	77.5	72.0
1980	55.4	75.5
1981	71.3	95.8
1982	64.5	129.3
1983	58.6	120.0
1984	66.0	143.7
Total	709.5	1048.1

Source: Republic of Kenya 1964–1985a.

¹ Kenya has received a substantial amount of foreign investment throughout the 20th century. Since the late 1800s, Britain has invested in Kenya, first in the production of primary exports (especially tea and coffee) by white settler farmers, and later in manufacturing. Since Kenya achieved independence in 1963, the United States, Canada, Japan, India, and several European countries (including Britain) have maintained a financial presence in Kenya (see Swainson 1980). In addition to foreign investment, the United States has formed an increasingly strong military alliance with Kenya. During the 1970s, the United States emerged as the main arms supplier to Kenya; moreover, the two countries have signed several security agreements in the 1980s (Gordon 1984, pp. 309–10).

been far below the outflow of international investment income (or foreign profit) over the period 1963–1984.

The profitability of multinationals has been further demonstrated in a recent paper that examines after-tax profits for several transnational subsidiaries and several companies *not* linked to multinationals. The data cover the years 1974–1979 and are available from the Companies Registry in Nairobi. These data clearly indicate that multinational subsidiaries are substantially more profitable than companies not associated with foreign capital. More specifically, transnational subsidiaries in the commercial and holding business averaged an after-tax profit of 15.7 percent, and subsidiaries in the manufacturing sector averaged a 15.9 percent profit. By contrast, companies not linked to multinational corporations averaged only a 5.7 percent profit (Langdon 1987, p. 358).

Multinationals seek a high level of protection for their investments. In accord with dependent-development arguments, the Kenyan state has commonly offered two forms of protection when negotiating with foreign investors. First, investors receive tariff protection against foreign companies that are potential competitors. In the 1960s, for example, many companies were given this protection as the Kenyan government charged competitors an import tariff of 15 to 50 percent, depending on the product (Eglin 1978, p. 107). Second, investors receive quota protection; competitors are limited with respect to the number of products they can produce in Kenya or import into Kenya. Perhaps the best example of this action is the 1969 agreement between Firestone and the Kenyan government. This agreement banned all tire imports into Kenya by competitors and actually required approval by Firestone before any such imports could occur in the future (Langdon 1978, p. 172). Although few companies have been given the total ban enjoyed by Firestone, they often are afforded some type of quota protection. The effect of tariffs and quotas is clear: It creates monopoly control over the market in Kenya, increasing the price charged by local subsidiaries.

The Kenyan government also benefits from its association with foreign capital. Multinationals provide the capital and technology required for local manufacturing (see below), and they generate tax revenue for the state. Foreign-based companies must pay a 47.5

percent tax on their repatriated profits, revenue that enables the state to expand its influence in the economy. These companies have attempted to reduce their taxable profits by paying management, technical assistance, and other fees from the subsidiary in Kenya to the parent firm abroad. This practice represents an easy way to transfer profits from a subsidiary to its parent, since these payments are not officially considered profit remittances. The Kenyan government has attempted to halt this practice, however, by enacting a 20 percent withholding tax on fee payments between subsidiaries and their headquarters (Langdon 1981, p. 128). Despite the withholding tax, some subsidiaries continue to pay these fees because it is a good way to remit profits (Langdon 1981, p. 128). The withholding tax is only 20 percent, but the regular tax on repatriated profits is more than twice as high.

The state has not interacted only with foreign capital, however. Since the mid-1960s, the Kenyan government has acted on behalf of a small African bourgeoisie that desires more access to commercial activities dominated by foreign citizens and companies. The Trades Licensing Act of 1967 excluded noncitizens (primarily Asians) from all domestic trade in rural and noncentral urban areas, and it barred noncitizens from trading a wide variety of products (Swainson 1977, p. 41; 1980, p. 187). In 1975 the Trades Licensing Act was amended, requiring foreign manufacturers to use citizen—preferably African—distributors selected by the Kenya National Trading Corporation. To further increase the number of African distributors, the government often pressures foreign corporations to use even more distributors than might be considered efficient. For example, Firestone has been forced to use over 75 distributors even though it would prefer to use about half that number (Business International 1980, pp. 86–87).

This example of multinationals and distributorships fits nicely into the dependent-development paradigm. Multinationals (e.g., Firestone) continue to dominate capital-intensive industry with protection from the state. The state, in turn facilitates industrialization within the nation and collects additional tax revenue from foreign companies. At the same time, state action increases local participation in the commercial sector of the economy. This enhances the power of an

indigenous bourgeoisie and may help foreign capitalists by giving them access to local commercial expertise. It should be noted, however, that Kenya's local bourgeoisie is not nearly as developed as the Brazilian bourgeoisie described by Evans (1979). The Kenyan bourgeoisie is newer and less developed than in a country like Brazil.

Cooperation between foreign capital, local capital, and the domestic state has become increasingly complex since the early 1970s, "the beginning of a new era of investment in Kenya" (Swainson 1980, p. 224). Almost all investment since that time has been through partnerships and joint ventures between foreign and local (including state) capital. This interaction is apparent when looking at Kenya's major industrial-investment agencies, local institutions responsible for financing national industrial expansion. By 1973 there were three such agencies: The Industrial and Commercial Development Corporation (ICDC), the Development Finance Company of Kenya (DFCK), and the Industrial Development Bank (IDB). It is easier to understand the objectives behind these institutions after we see where their funding is derived (see Leys, with Borges and Gold 1980; Swainson 1980). The ICDC draws its revenue from the Kenyan government (about 60 percent), commercial bank loans, and the West German Government. The DFCK is equally owned by the Commonwealth Development Corporation, the German Development Company, the Netherlands Finance Company for Developing Countries, and the Kenyan government. The IDB is owned exclusively by the Kenyan government, with 49 percent of the funding derived from the Treasury and the balance shared by three local parastatals: The ICDC (26 percent), the National Bank of Kenya (12.5 percent), and the Kenya National Assurance Company (12.5 percent). Quite significantly, the IDB also has an extensive line of credit from the World Bank, the German Development Company, and the Export Credit Guarantee Department of Britain.²

² Like most African countries, Kenya has suffered from an increasingly serious external public-debt problem. Recent statistics (in U.S. dollars) help illustrate the magnitude of this situation. In 1984, Kenya's total external public debt (outstanding and disbursed) was 2.633 billion dollars. Moreover, the nation's interest payments

It is clear that each investment agency receives a substantial amount of capital from foreign sources. Not surprisingly, therefore, these agencies are involved in joint ventures with multinational corporations. Several good examples of such ventures are provided by the vehicle-assembly industry in Kenya. During the 1970s the Kenyan government invited foreign companies to submit proposals for the local assembly of heavy vehicles. Three proposals were accepted and each represented a joint venture. The first included three investment partners, namely, British Leyland (45 percent), the Kenyan Treasury (35 percent), and a Kenyan distributing company (20 percent). The second simply included General Motors (49 percent) and the ICDC (51 percent). The third joint venture was more complex, involving Associated Vehicle Assemblers (49 percent), the Kenyan Treasury (26 percent), and the IDB (25 percent) (Business International 1980). Associated Vehicle Assemblers is owned by Lonrho (one of the largest British investors in Africa), MacKenzie Dalgety, and local Kenyan business partners. As part of each joint venture, the foreign companies were given management contracts and afforded import protection for their particular types of vehicles (Kaplinsky 1982, p. 212; Business International 1980, pp. 54-55; Swainson 1980, p. 232, 273-84).

Foreign Capital, Local Capital and the State: A Continuing Debate

Is Kenya's manufacturing sector characterized by an equal partnership of foreign capital, local capital, and the state? Or is one actor more dominant than another? This question has provoked a debate over the role played by the Kenyan state regarding foreign and local capital (see Godfrey 1982, Kitching 1985, and Langdon 1987 for reviews of the entire debate). One view holds that the Kenyan state is manipulated by external capital (see Kaplinsky 1982). He insisted that

alone on this amount totaled 144 million dollars (World Bank 1986, p. 214). In 1983, Kenya's total external public debt was 2.384 billion dollars and the interest payments were 127 million dollars (World Bank 1985, p. 204). The figures for 1982 are similar, as the external public debt was 2.359 billion dollars and the interest payments totaled 147 million dollars (World Bank 1984, p. 248).

the Kenyan state enhances multinational profits without exacting any significant concessions from these firms. Further, and quite important, the state supposedly collaborates with foreign companies to exclude local capitalists from becoming an independent and viable force in the Kenyan economy. This view asserts that the state often has permitted multinational subsidiaries to borrow from local parastatal banks like the IDB, making it easier for foreign capital to maintain an advantage over local private capitalists. Kaplinsky (1982) asserted that local capitalists lack the resources to move independently into areas like large-scale manufacturing, mainly because they are totally dependent on joint ventures and licensing agreements with foreign capital.

Langdon (1977, 1981) partially agreed with Kaplinsky concerning the relationship between foreign capital, local capital, and the Kenyan state. Langdon also argued that multinationals are the dominant economic force in Kenya now and will remain so in the immediate future. The emerging local bourgeoisie, to the extent they exist, do not play an independent role and are unable to mount a formidable challenge to the supremacy of external capital. In disagreement with Kaplinsky, however, Langdon assigned a crucial mediating role to the Kenyan state, a role that has created a "mutually dependent *symbiosis*" between multinationals and the local state (Langdon 1977, p. 95). On the one hand, the state retains some degree of independence by exacting high taxes and other concessions from foreign capital (e.g., requiring joint venture participation). On the other hand, these concessions do not preclude multinationals from extracting a surplus in Kenya that is repatriated.

In contrast, other scholars postulate that private Kenyan capital is beginning to pose a serious threat to foreign capital in a limited number of industries (see Swainson 1980). This is especially evident in industries that produce tea, shoes, soap, bricks, and several other products. For instance, locally owned enterprises like the Tiger Shoe Company, the Chui Soap factory, and the Gema Corporation (which assumed control of an American brick-making firm) supposedly are competing successfully with foreign capital. These companies are not doing it alone, however, since most local businesses are partly owned by the Kenyan government or one of its

agents. Thus, local enterprises receive loans from Kenyan banks and other government agencies such as the IDB (Swainson 1980, pp. 208–11). This shows that the state is interested in assisting local private capital compete against externally based firms. Swainson qualified her argument by stressing that "[i]n comparison with large multinational firms in Kenya, indigenous capital is small and insignificant. Nevertheless, at the *present stage* of accumulation in Kenya it is still the case that value formation is *nationally* based and the state is able to support the interests of the internal bourgeoisie" (Swainson 1980, pp. 289–90).

This view was supported by Leys (1982a, 1982b) who, in addition to noting the growing independence of an indigenous bourgeoisie, also stressed the development of a middle class that is closely linked to local elites. This expanding middle class includes lawyers, physicians, accountants, academics, journalists, and other professionals. The emerging African bourgeoisie and middle class are only apparent, argued Leys, on examination of historical trends. To help make his point, Leys denounced Kaplinsky's ("compradore") perspective as "empiricist and a-historical . . . His view of Kenya starts and finishes with *appearances*, as they present themselves at a more or less fixed point in time" (Leys 1982b, p. 226). According to Leys's critique, Kaplinsky's argument might be supported if one simply examined the strength of foreign and local capital at a single point in time, since foreign capital still dominates heavy industry. This is not the proper method of examination, claimed Leys, because it does not capture the trend that increasingly favors state support of a local capitalist class. Through joint ventures and other state action (e.g., increased commercial opportunity for Africans), the Kenyan government helps local capital compete against foreign companies.

In a recent addition to the debate over the relative power of local state and private capital, Kitching (1985) argued that a paucity of conclusive evidence precludes a determination about whether local capital is dependent or increasingly strong and independent. He stated, "At the moment there is simply no way of choosing between these two conceptions, or of any other conception, because the same amount of empirical evidence available is adduced in support of both conceptions" (Kitching 1985, p. 128). This is partially

accurate. True, "the same amount of empirical evidence" has been produced on both sides—and the amount in each case has been inadequate. Both sides in the debate have presented a small amount of descriptive data that supposedly support their respective arguments. But no study on either side has formally tested a variety of arguments that would assess the validity of each perspective. Both sides talk about their hypotheses and evidence, but neither has formulated hypotheses and then tested them with an appropriate statistical test (or any statistical test, for that matter).

In sum, it is important to refocus this debate back to a critical theoretical point: Kenya looks like a country that is undergoing an economic transition. Although the country is still dependent on raw material exports (especially tea and coffee), it has increasingly emphasized manufacturing expansion since achieving political independence. A substantial amount of foreign capital is invested in the "modern" manufacturing sector. Further, the state protects foreign capital by enacting protective tariffs and import quotas. Although there is still great debate over the current and potential strength of local capital, it appears that a domestic bourgeoisie is in a stronger position today than ever before.

SUMMARY OF ARGUMENTS AND DERIVED HYPOTHESES

The following hypotheses formalize some of the fundamental arguments made in the paper. The hypotheses make statements about the impact of foreign capital penetration, domestic capital, and the Kenyan state.

1. *Foreign capital penetration.* This paper has argued that, since independence, foreign capital penetration has enhanced economic expansion in the manufacturing sector but not in the agricultural sector. At the same time, it was argued that Kenya's agricultural sector is heavily dependent on exports.

2. *Domestic capital.* Some students of Kenya state that domestic capitalists are weak and dependent, deriving limited power from their relationship with external capital. Another group—reflecting the dependent-development perspective—assigns a stronger and more independent role to an indigenous bourgeoisie concentrated primarily in light industry (manufacturing) and commerce. If the former group is correct, then investment

by local capitalists will not be sufficient to produce economic expansion. Conversely, if the latter group is correct, then local investment may facilitate economic growth, especially in the manufacturing sector.

3. *The state.* Again, one group of scholars views the state as a weak and dependent institution, unable to act independently of foreign capital. By contrast, the latter group—following the dependent-development argument—sees the state as a strong actor that regulates and protects foreign capital while simultaneously promoting a local bourgeoisie. Accordingly, the state has expanded its role and can facilitate growth and development in different sectors of the economy, especially the manufacturing sector. If the first group is correct, then the state will lack the requisite strength to promote national economic growth. By contrast, if the second group is correct, then the state may possess the power to enhance economic development, especially in manufacturing.

MODELING TREND IN A SINGLE COUNTRY

Almost all quantitative studies of dependency and world-system theories (including the dependent-development perspective) have used cross-national data. Cross-national testing has been vigorously denounced by some scholars, however, because it uses data from a variety of countries and therefore examines "different situations of dependency as if they form part of the same continuum of dependency-independence" (Cardoso 1977, p. 23, n. 12).³ Cross-national studies ignore historical processes unique to individual countries. A useful quantitative study, according to Cardoso's reasoning, must include single-country data that capture trends over time. This is a crucial point when examining the case of Kenya because the debate over the relative strength of foreign capital, local capital, and the state is contingent on recent trends. According to some scholars, the dominant

³ Advocates of cross-national research disagree with this claim, arguing that (1) cross-national tests do not assume that all countries are the same and (2) such tests can model regional differences (see Robinson 1977; Chase-Dunn 1982). For example, an analysis of covariance design using dummy variables will facilitate an examination of different groups of countries in a cross-national sample.

position of foreign capital has been gradually attenuated as local capital and the state enhance their positions in the economy.

Time-series analysis is an ideal way to assess recent trends in a single country. In contrast to cross-national designs, time-series models use time points instead of countries as the unit of analysis (see Chase-Dunn, Pallas, and Kentor 1982). Hammer and Gartrell (1986), for example, have used time-series analysis to examine "mature dependency" in Canada between 1947 and 1978. Although few Third World countries have reliable data for 32 points in time, some have enough recent (post-independence) data to allow time-series testing. Kenya has maintained relatively good annual time-series data for a variety of variables since 1963. This study has collected such data for the years 1963–1984, a sufficiently long period to construct some cautious time-series equations.

The most simple and straightforward approach to hypothesis testing involves the OLS regression of one time series (Y) on another time series (X), where X is the presumed cause of Y. An OLS model is only useful, of course, when autocorrelation and time trending do not distort the analysis. To correct for the potential effects of these conditions and to control for otherwise unspecified effects, this analysis includes a lagged dependent variable in each equation (see Maddala 1977; Ostrum 1978; Wonnacott and Wonnacott 1979; Pindyck and Rubinfeld 1981; Johnston 1984). Inclusion of a lagged endogenous variable actually creates a change score, as the dependent variable is residualized against its lagged value. Thus, the analysis examines the annual change in the dependent variable produced by the various independent variables.⁴ The analysis uses OLS regression because, as demonstrated below, various tests

(e.g., Durbin's *H*) indicate that autocorrelation does not distort the results.

VARIABLE MEASUREMENT

This study examines the impact of several variables on three dependent indicators: total economic output, manufacturing output, and agricultural output. It is important to examine these three sectors because this paper has argued that foreign capital penetration does not have an equal effect on all sectors of the economy. External capital facilitates manufacturing expansion but not agricultural growth. At the same time, raw material exports may promote agricultural expansion but not manufacturing growth.

Every variable is based on annual data between 1963–1984.⁵ All data come from two documents published annually by the Republic of Kenya: The *Economic Survey* (Republic of Kenya 1964–1985a) and the *Statistical Abstract* (Republic of Kenya 1964–1985b). These documents are available in their entirety at selected universities in the United States. Northwestern University, for instance, has all of these data in its Africana library. All variables are taken directly from these two documents and, with only two exceptions (noted below), the indicators do not require any calculation or reconstruction.

Dependent Variables

1. *Total economic output.* Following other time-series analyses, this study measures total economic output as the total Gross Domestic Product at factor cost.

2. *Manufacturing output.* As discussed earlier in this paper, a substantial amount of foreign capital has been allocated to manufacturing enterprises in Kenya. Manufacturing output is measured as the GDP accounted for by manufacturing activities at factor cost.

3. *Agricultural output.* Relatively little foreign capital has been invested in Kenya's agricultural activities since independence. This fact provides an opportunity to compare the causes of manufacturing expansion with the causes of agricultural expansion. Agricultural output is

⁴ One reviewer suggested that an alternative specification might include lagged values for both the independent and dependent variables. This alternative strategy should be pursued if the theoretical argument posits a lagged (i.e., nonimmediate) effect of the independent variables on the dependent variables. This study has not made such an argument and therefore the independent variables are not lagged. The dependent variables, by contrast, should be lagged to obviate potential problems associated with autocorrelation and time trending.

⁵ The first year in the time-series (1963) is dropped because a lagged endogenous variable is included in each equation. Thus, the analysis actually covers 21 points in time, 1964–1984.

measured as the GDP accounted for by agricultural enterprises at factor cost.

Independent Variables

1. *Foreign capital penetration.* The most important feature relevant to foreign investment in Kenya pertains to the amount of money leaving the country in the form of multinational profits. It is reasonable to argue that foreign-based companies will continue to invest in manufacturing enterprises as long as they are profitable. This study measures foreign capital penetration as net debits on "international investment income." This indicator, which is listed under the balance of payments account in the government documents, assesses the amount of international investment income that leaves Kenya.

2. *External public debt.* Kenya's increased reliance on foreign aid and loans has expanded its external debt. External debt is measured as the total amount of capital guaranteed to outside sources by the Kenyan government. These outside sources include both countries and international organizations (e.g., the International Bank for Reconstruction and Development and the African Development Bank).

3. *International trade.* Previous studies focusing on economic dependency have argued that international trade has an adverse impact on Third World development. Raw materials are exported from poor countries and inappropriate technology and luxury items are imported into these regions. This study measures international trade as the sum value of all imports and exports. Because the government documents list imports and exports separately, the international trade variable was computed by adding these two indicators together.

4. *Total exports.* Because Kenya is heavily dependent on exports, it is also important to evaluate this indicator separately. Total exports is measured as the value of all exports from Kenya.

5. *Domestic investment in manufacturing.* As discussed earlier in the papers, some scholars suggest that domestic capital is mounting a challenge to foreign capital in several manufacturing industries in Kenya. To examine the effects of domestic investment in manufacturing, this paper includes a variable measuring domestic capital formation in manufacturing.

6. *State strength.* The dependent-de-

velopment view asserts that the local state is strong, active, and at least partially independent of international capital. One group of scholars (e.g., Swainson 1980; Leys 1982a, 1982b) has argued that the Kenyan state has become increasingly strong since independence. It simultaneously protects foreign companies and collects taxes from them; forms joint ventures with local and foreign companies; helps local companies compete with foreign capital; and generally regulates national economic growth. Unfortunately, it is exceptionally difficult to conceptualize and measure state strength. Previous development studies have examined state activity (i.e., strength, activism, and expansion) by assessing the state's ability to collect taxes. If a state can collect taxes from individuals and companies inside its borders, then it has the capacity to direct national resources and to control basic economic behavior (Delacroix and Ragin 1981; Bradshaw 1985). Although taxation is a good measure of state strength, it does not account for a variety of nontax revenue collected by many African states, including Kenya (see Bates 1981). Thus, this paper measures state strength as total central government revenue, i.e., revenue collected by many African states, including Kenya (see Bates 1981). Thus, this paper measures state strength as total central government revenue, i.e., revenue collected by the central government from all sources.

Important Control Variables

1. *Total employment.* Modernization theorists (e.g., Inkeles and Smith 1974) have argued that economic expansion is largely contingent on increased employment in "modern-sector" occupations. This study controls for modern-sector employment by including a variable for the total number of people employed in private-sector (wage-earning) employment.

2. *Urban-rural disparity.* Urban-bias theorists (e.g., Lipton 1977) have suggested that short-term economic expansion in the Third World may occur because of state policies that favor urban enterprises at the expense of rural activities. This disproportionate emphasis on urban development may stimulate manufacturing and other "modern" activities. To measure the level of urban bias, this paper attempts to assess the income disparity between urban and rural areas. The disparity is measured as the ratio of average earnings in nonagricultural (i.e., urban) enterprises to average earnings in agricultural activities.

Average sectoral earnings have been calculated by the Kenyan government and thus urban-rural income disparity is constructed by simple division (average nonagricultural earnings/average agricultural earnings). It should also be noted that the government documents state that earnings "cover all cash payments, including basic salary, cost of living allowances, profit bonus, together with the value of rations and free board, and an estimate of the employer's contribution towards housing."

RESULTS OF THE TIME-SERIES ANALYSIS

The results in the analysis are produced by an econometrics computer program known as SHAZAM (see White and Ho 1984). To preserve scarce degrees of freedom, it is essential that unnecessary variables are excluded from each equation. This analysis runs a variety of equations to insure that no result is a statistical artifact.

Results reported in Table 2 illustrate the effects of several variables on total economic output. In the first equation, foreign capital penetration, external debt, and state strength all demonstrate a significant positive impact on total economic output.⁶ The second equation drops the nonsignificant indicators (to preserve degrees of freedom) and adds the two control variables, total employment and urban-rural disparity. Foreign capital penetration, external debt, and state strength still demonstrate a positive impact on economic output, while the control variables fail to show a significant effect. These findings support the argument that foreign capital and a strong state contribute to total economic expansion.

⁶ Durbin's *H* statistic is the most common test for serial correlation when a lagged endogenous variable is included in the model. However, this statistic cannot always be computed because it requires the calculation of a square root. It is not possible, of course, to take the square root of a negative number (White and Ho 1984, p. 35). Durbin formulated an alternative test for situations that do not permit use of Durbin's *H* (see Ostrom 1978, p. 52; Pindyck and Rubinfeld 1981, p. 195). The alternative uses a standard *t*-test to examine whether the null hypothesis of no serial correlation can be rejected. The analysis in this paper uses Durbin's alternative test when Durbin's *H* cannot be computed. As demonstrated by both techniques, autocorrelation is not a problem in any equation in the analysis.

Table 2. Time-Series Analysis of the Causes of Total Economic Output

Independent Variables	Dependent Variables	
	(1) Total Output	(2) Total Output
Constant	80.153* (1.780)**	-218.710 (.652)
Total output _{t-1}	.399 (1.633)*	.477 (1.967)**
Foreign capital	3.434 (2.298)**	2.794 (1.855)**
External debt	.282 (1.865)**	.206 (1.448)*
Trade	.185 (1.071)	— —
Domestic investment	1.316 (1.086)	— —
State strength	.908 (1.372)*	1.202 (2.258)**
Total employment	— —	.600 (1.134)
Urban-rural disparity	— —	16.596 (.316)
Adjusted <i>R</i> ²	.998	.998
Durbin's alternative	.361E-05	.280E-05
Rho	.094	-.029
Estimation technique	OLS	OLS

* = metric coefficient (t-statistic).

* = $p < .10$ (one-tailed).

** = $p < .05$ (one-tailed).

t-1 = endogenous variable lagged one point in time.

The next part of the time-series analysis is perhaps the most important from the dependent-development perspective because it examines the causes of manufacturing output. According to this view, foreign capital penetration should be strongly associated with manufacturing growth. Results from the first equation of Table 3 show that foreign capital penetration, international trade, and state strength have a significant positive impact on the dependent variable. To test the consistency of these findings, the nonsignificant indicators are dropped and the two control variables are added to the equation. Again, only foreign capital penetration, international trade, and state strength demonstrate a positive effect on manufacturing growth.

The findings reported in Tables 2 and 3 provide strong support for the dependent-development perspective, as foreign capital penetration and state strength have a consistently positive impact on both total economic

Table 3. Time-Series Analysis of the Causes of Manufacturing Output

Independent Variables	Dependent Variables	
	(1) Manufacturing Output	(2) Manufacturing Output
Constant	3.942 (1.465)*	-17.779 (.662)
Manufacturing output _{t-1}	.675 (6.397)**	.732 (8.928)**
Foreign capital	.195 (1.777)**	.217 (1.981)**
External debt	.006 (.629)	— —
Trade	.023 (1.492)*	.023 (1.562)*
Domestic investment	-.032 (.309)	— —
State strength	.100 (1.790)**	.083 (1.803)**
Total employment	— —	-.001 (.022)
Urban-rural disparity	— —	4.782 (1.124)
Adjusted R^2	.999	.999
Durbin's H	.327	-.243
Rho	.063	-.049
Estimation technique	OLS	OLS

Note: See note to Table 2.

output and manufacturing output. By contrast, domestic investment in manufacturing fails to demonstrate a significant impact on either dependent variable. This indicates that, despite recent trends that suggest an emerging Kenyan elite, local manufacturing capital still does not possess sufficient strength to stimulate manufacturing output or total economic output. In one sense, this finding conflicts with dependent-development arguments, which assert that foreign capital, local capital, and the domestic state are equally strong (Evans 1979). However, the "triple alliance" exemplified by Brazil and other semi-peripheral countries does not fully apply to Kenya and most other African countries. Nonetheless, foreign capital penetration and a strong domestic state still facilitate economic growth in manufacturing and the total economy. This finding is congruent with the central logic of dependent development because Kenya's high level of dependence on foreign capital has not prevented it from experiencing economic expansion.

Table 4. Time-Series Analysis of the Causes of Agricultural Output

Independent Variables	Dependent Variables	
	(1) Agricultural Output	(2) Agricultural Output
Constant	-3.202 (.015)	11.273 (.068)
Agricultural output _{t-1}	.278 (1.098)	.343 (1.785)**
Foreign capital	2.580 (2.115)**	1.273 (1.249)
External debt	-.065 (.820)	-.022 (.406)
Trade	.001 (.006)	— —
State strength	.536 (1.254)	.159 (.700)
Urban-rural disparity	10.361 (.215)	.231 (.006)
Export	— —	.638 (3.051)**
Adjusted R^2	.984	.990
Durbin's alternative (Durbin's H)	.000E+00	(-1.042)
Rho	.088	-.108
Estimation technique	OLS	OLS

Note: See note to Table 2.

The final part of the analysis investigates the impact of several variables on agricultural output in Kenya.⁷ In Kenya most primary commodities are part of the agricultural sector. Because foreign capital has increasingly been concentrated in manufacturing enterprises since independence, it would seem unlikely that such investment would have an effect on agricultural output. This hypothesis is not supported by the first equation in Table 4, for foreign capital has a strong positive impact on agricultural output. It is possible, however, that this equation has omitted an important variable. Specifically, a variable for total exports should be included because Kenya's agricultural sector is still heavily dependent on exports for economic expansion. The second equation substitutes total exports for international trade (which includes

⁷ Domestic investment in manufacturing and total employment are not included in this equation because there is no theoretical rationale for doing so. The urban-rural disparity is included because an earnings differential between country and city could harm agricultural production.

both imports and exports); the results show that total exports has a very strong positive effect on agricultural growth, whereas the impact of foreign capital has been reduced to nonsignificance.

Results from Tables 2-4 provide an interesting picture of sectoral development in Kenya. Although foreign capital and the Kenyan state help stimulate both total economic output and manufacturing output, they do not aid agricultural output. Instead, growth in the agricultural sector is intimately tied to total exports. On balance, these results indicate that, in accord with dependent-development arguments, foreign capital penetration and the local state contribute to uneven development in Kenya. More specifically, foreign investment and the state promote development in the "modern" (i.e., nonagricultural) sectors of the economy. Foreign investment and state strength are the only variables to show a significant positive effect in all equations pertaining to total economic output and manufacturing output. By contrast, domestic investment in manufacturing, total employment, and urban-rural disparity fail to demonstrate a significant impact in any equation.

Uneven economic development stimulated by foreign capital typically is accompanied by severe income inequality. Not surprisingly, Kenya's distribution of income is highly uneven, as local elites associated with the formal sector and large-scale agriculture are near the top of the income scale. One of the most comprehensive surveys of income in

Kenya is still the International Labor Office's (ILO) report on employment and equality, which categorized different occupations and activities by average income (ILO 1972). Table 5 shows a condensed version of a table presented by the ILO, illustrating (a) seven economic groups listed in descending order of household income, and (b) the percentage of total households with a particular level of income. Most foreign capital is directed to enterprises in the formal sector, aiding a small segment of Kenyans in the top two or three categories. The top three categories combined represent only 12.8 percent of total households.

These findings have been supported by recent (though less comprehensive) income surveys of Kenya (see Ghai, Godfrey, and Lisk 1979; Ng'ethe 1980; World Bank 1987). The World Bank, for example, presents data from 1976 showing severe income inequality in Kenya. The top 10 percent of households held 45.8 percent of national income, and the top 20 percent possessed 60.4 percent. By contrast, the bottom 20 percent held 2.6 percent, and the bottom 40 percent possessed only 6.3 percent (World Bank 1987, p. 252).

DISCUSSION AND CONCLUSION

The Republic of Kenya exemplifies the changing process of dependency in the world system. Although the country depends on raw material exports, it also embodies many characteristics of dependent development. These findings have important implications

Table 5. Annual Income of Economic Groups, in Kenyan Pounds circa 1970

Economic Group	Income	Households (%)
(1) Owners of medium- and large-scale enterprises in the formal sector; big farmers; self-employed professionals; high-level formal-sector employees	1000 +	1.28
(2) Owners of medium-sized enterprises in the formal sector; less prosperous big farmers; intermediate-level employees in the formal sector	600-1000	2.14
(3) Small group of owners of enterprises in the formal sector; small group of owners of nonagricultural rural enterprises; semiskilled employees in the formal sector; prosperous smallholders	200-600	9.40
(4) Most owners of nonagricultural rural enterprises; unskilled laborers in the formal sector; many smallholders	120-200	10.26
(5) Small group of owners of nonagricultural rural enterprises; small group of unskilled workers in the formal sector; employees in formal-sector agriculture; small group of urban informal laborers	60-120	14.10
(6) Smallholder and rural nonagricultural workers; most urban informal laborers; some smallholders	20-60	48.72
(7) A few smallholders; pastoralists; unemployed and landless people in both rural and urban areas	20 and less	14.10

Source: ILO 1972, p. 74.

for general arguments relevant to different types of economic dependency. First, they show that economic dependency does not always inhibit economic growth, even in very poor peripheral countries. Moreover, in contrast to claims that only a few semi-peripheral countries will undergo dependent development (Evans 1979, p. 33), this research shows that a poor peripheral nation can also achieve such "status" if it receives foreign investment and possesses a relatively strong state. Kenya has long received a substantial amount of foreign investment, particularly in manufacturing. Multinationals obviously find investment profitable, but they do not completely dominate the Kenyan economy. These companies are taxed heavily by the Kenya government and are required to form joint ventures with domestic capital and to use local distributors. Of course, external companies also benefit from state policies that shield them from foreign competition and permit a high level of profit repatriation.

Future development research should continue to examine the relationship of foreign capital, local capital, and the domestic state. Although these actors may be relatively equal partners in strong semi-peripheral countries (e.g., Brazil), they do not exhibit equal strength in most peripheral societies. In Kenya, for instance, local capital is not yet sufficiently developed to become an equal partner with foreign capital and the state, as indicated by the consistently nonsignificant effect of domestic investment in the analysis. Although a local bourgeoisie may be gaining strength in some branches of domestic manufacturing, it is not as strong as foreign capital and the state. Despite the limited strength of local capital, however, Kenya has experienced dependent development through the influence of foreign capital and the domestic state.

Scholars should conduct additional case studies that examine the dynamics of dependent development in different countries. This approach will contribute to knowledge about particular countries and, perhaps more importantly for sociologists, lead to the refinement of dependency and world-system arguments. The completion of numerous case studies will facilitate comparison of countries in different regions (e.g., Latin America and Africa) and at different levels of economic development (e.g., periphery and semi-periphery). Only detailed comparative studies will provide

sufficient information to make judgments about the different processes of economic dependency in the world system.

In the absence of case studies, researchers will continue to apply the broad arguments of dependency/world-system theory without appreciation for the unique circumstances of individual countries. By using time-series data to examine individual countries, researchers can determine what types of economic dependency (if any) influence various nations. Failure to quantify arguments in a case study, however, will perpetuate the seemingly endless debate over the validity of dependency and world-system theories, with each side adducing sophisticated arguments and descriptive evidence, at best. Scholars should continue these debates, but they should not hesitate to use quantitative techniques to test their assertions.

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BIOLOGICAL PREDISPOSITIONS AND SOCIAL CONTROL IN ADOLESCENT SEXUAL BEHAVIOR*

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This paper develops biosocial models of adolescent sexuality that combine traditional sociological models with models derived from a biological theory of hormone effects. Data are presented from a representative sample of 102 males and 99 females, drawn from grades 8, 9, and 10 in public schools in a southern U.S. city, and ranging in age from 13 to 16 years old. Although the sociological models alone look quite satisfactory, the combined models are stronger and give a different picture of the determinants of adolescent sexuality. The combined models show not only additive contributions of sociological and biological variables, but interactions between sociological and hormonal variables. Some sociological relationships are shown to be spurious. In other cases, sociological predictors are shown to be endogenous to biological predictors.

Sociologists have long dealt with adolescent sexuality as deviant behavior from the perspective of society (Reiss 1970). According to social-control theory, everyone wants to do it, and, without social control, would engage in socially undesirable sexual activity. The sociological question then becomes, paraphrasing Hirschi (1969), not "Why do they do it?" but "Why don't they do it?" Reiss (1970) also specifically defines motivation for sex to be outside the purview of sociological theory.

Hirschi has proposed a control theory of deviant behavior that takes motivation for granted and explains how investment in traditional institutions of society restrains the deviant behavior of adolescents. His theory has become a prototype for social-control theories (Liska and Reed 1985). Although Hirschi does not specifically deal with sexual behavior, other studies show that sexual behavior belongs to a class of adolescent norm violations whose occurrence is both intercorrelated and predicted by the same models (Jessor and Jessor 1977).

Hirschi's social-control model is not specifically invoked by researchers studying the determinants of adolescent sexual behavior, but the same concepts of social control are implicit in their models. Thornton and

Camburn (1987) use parental attitudes, family structure, respondent's religion and church attendance, and other family variables as measures of social control predicting adolescent sexual behavior. Hogan and Kitagawa (1985) use similar family variables plus neighborhood characteristic implicitly measuring social control of adolescent coitus. Udry and Billy (1987) add peer effects to the family characteristics supposed to control sexual behavior of younger adolescents.

The sociologically naive layman takes for granted that there is a biological substrate that predisposes some people to sexual behavior more than others. Biological researchers have identified a hormonal basis for sexual behavior that in broad terms confirms the layman's presumption (Bancroft 1986, 1987). If this is the case, then we may modify Hirschi's presumption, "We would if we dared," to "Some of us would if we dared." Still, the sociologist might well conclude that the biological basis of sexual motivation is the biologist's business and will not affect the models of the sociologist in any case. The objective of this paper is to explore the possibility that taking the hormonally based predisposition into account provides new sociological insights.

Adolescent sexual behavior provides an exceptional opportunity to explore the interplay of predispositions and social controls. The hormonal changes of puberty are commonly regarded as the foundation of libido (biologically based predisposition to sexual behavior), but empirical documentation has

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been lacking. Recent work by the present author and his collaborators (Udry, Billy, Morris, Groff, and Raj 1985; Udry, Talbert, and Morris 1986; Udry and Billy 1987) provides preliminary evidence for the role of adolescent hormones in sexuality. Since adolescents mature at different rates and at different ages, this leads to the presumption that some adolescents are more predisposed to sexual activity than others. Measures of predisposing hormones might contribute additively to explaining sexual behavior in adolescence. If this were the case, a combined biosocial model would give insight into the relative contribution of motivational and control features to the behavior. A sociological model in itself would not be wrong, but only incomplete.

But there are other possibilities: (1) If some adolescents lack sexual motivation, then they don't need social controls to inhibit them. One way or the other, they will be abstinent. In this case, there may be interactions demonstrating that social controls work only (because they are needed only) on those with high levels of predisposing hormones. If there are interactions between hormonal and sociological variables, then the addition of interactions will illuminate the process. (2) Some sociological variables may be endogenous to hormonal predispositions. In this case, the effects of sociological variables may represent the indirect pathways of hormonal effects. In either case, incorporation of the biological variables would improve our understanding of the sociological process.

This presumes that all "social controls" are inhibitory, and, of course, this is the thrust of social-control theory. But sexual behavior is an age-graded behavior that is both proscribed in early adolescence and permitted at later ages. Social pressures to engage in sexual behavior increase as one reaches middle adolescence. Sex is both an entitlement and an obligation of maturity.

There is another aspect of sexual behavior that places it in a different category from some other controlled behaviors. In most sexual behavior, there is no victim. In order to engage in the behavior, it takes a willing partner. Some people have characteristics, both physical and social, that make them more attractive partners. Attractiveness may be thought of as providing sexual opportunities. Motivation without opportunity or opportunity without motivation may not result in

sexual behavior, even in the absence of social controls.

I propose to test a biosocial theory that combines elements of social-science theories with a biological model of hormonal predispositions. For the social-control component of the theory, I use some elements of Hirschi's theory, which proposes that "delinquent acts result when an individual's bond to society is weak or broken." The elements of the bond to conventional society are: (1) emotional attachment to conventional institutions; (2) commitment to conventional behavior; (3) involvement with conventional institutions; (4) conventional beliefs.

To Hirschi's theory, I add elements of the "problem-behavior theory" of Jessor and Jessor (1977). Sexual behavior is one of a class of norm violations (including marijuana and alcohol use) that constitute a single factor of intercorrelated behaviors, which can be predicted by the same theoretical model. Furthermore, Jessor and Jessor note that these are age-graded norm violations, expected to occur with increasing frequency with age and only frowned on when they occur in early adolescence. From their problem behavior list, I select sexual behavior as the variable of interest. They propose a set of social-psychological variables, which may be thought of as motivational predispositions creating proneness to early transitions to the problem behaviors. Jessor and Jessor conceptualize these social-psychological variables as endogenous to social structure and deriving from the socialization process. For my theory, I take the concept of the age-graded social control. I incorporate some of the social-psychological variables from their model, which are, in practice, indistinguishable from variables constructed for the Hirschi model.

The biological theory is based on the simple proposition that androgenic ("male") hormones, which increase at puberty for both sexes, increase the predisposition to engage in sexual behavior. The role of androgens in adult sexual behavior has been the subject of hundreds of papers (for recent reviews, see Bancroft 1986, 1987), although the role of androgens in sexual behavior at puberty has only recently been documented (Udry et al. 1985, 1986, 1987). The most convincing evidence for androgen effects on adult male sexual behavior is based on controlled studies of androgen replacement versus placebo in hypogonadal men. These studies show dose-

related response, lagged by two to four weeks, in sexual interest to manipulated changes in androgen levels (Davidson, Camargo, and Smith 1979; Luisi and Franchi 1980; Skakkebaek, Bancroft, Davidson, and Warner 1981; O'Carroll, Chapiro, and Bancroft 1985; Salmimies, Kockett, Pirke, Vogt, and Schill 1982). In contrast, observational studies of normal young men show no relationship between testosterone levels and sexual behavior (Raboch and Starka 1973; Kraemer, Becker, Brodie, Doering, Moos, and Hamburg 1986; Brown, Monti, and Corriveau 1978). The findings of no effect on normals are made ambiguous by experimental administration of exogenous androgens to normal men complaining of lack of sexual interest, where modest effects were found (O'Carroll and Bancroft 1984).

The generally accepted conclusion from this research is that there are ceiling effects of androgens on males such that normal adult males are above the point beyond which there are no additional androgen effects. It is not that androgens do not affect the sexual behavior of adult males, but that the individual variance in androgens among this group is all above the ceiling-effect level. This makes normal adult males an especially poor choice of subjects for studies of the effects of androgens on sexual behavior. On the other hand, adolescent males may be thought of as analogous to hypogonadal adults, except that the androgen deficit is remedied by endogenous development.

For females there is a different story. Although prepubertal girls and boys do not differ in levels of testosterone (the most potent androgen), during puberty girls' levels double, whereas males' levels increase by a factor of 10 to 20. Females are thought to be behaviorally sensitive to T at low levels, to which males do not respond. Adult female levels of T correspond to those of males in very early puberty.

In adult females, correlational studies mostly show straightforward relationships between androgens and sexual interest and behaviors (Persky, Driesbach, Miller, O'Brien, Kahn, Lief, Charney, and Strauss 1982; Bancroft, Davidson, Warner, and Tyrer 1980). Loss of normal androgens through adrenal surgery causes loss of libido, and administration of testosterone to females with normal testosterone causes an increase in

libido, in contrast to males (Bancroft and Skakkebaek 1978).

Even though pubertal females have low levels of T compared to males at the same ages and levels of development, and the female range of T is restricted compared to males, females have been shown to be more sensitive than males to the same variations in T (Udry and Talbert 1988). This makes adolescent females an appropriate group for studying hormone-behavior relationships. On the other hand, the selection of adolescents raises complications. Since adolescents are at varying levels of physical maturation, and since age-graded behaviors change rapidly from year to year during adolescence, it is important to be able to separate hormone effects from age and physical development effects.

Figure 1 presents a path model of a biosocial theory that combines hormonal and sociological models. A sociological model would represent paths E, F, and H, or the effects of pubertal development, age, and social controls. A simple biological model would be limited to paths A and D, merely stating that as children grow older, their hormone levels rise, and this produces sexuality. A biosocial model not only combines these two models, which give rise to the possibility of additive biological and sociological effects, but specifies the possibility of indirect effects: age and hormones having indirect effects on sexuality through pubertal development (C, E; B, E); hormones having indirect effects through social controls (G, H). It also raises the theoretical possibility of interactions between hormones and social controls in effects on sexuality (I).

In constructing models of adolescent behavior, it is important to have a clear theoretical structure of the relationships among age, pubertal development, hormones, and the behaviors of interest. The mechanism for the initiation of puberty is unknown, but it is certainly related to the aging of the child. The hormone changes of puberty begin about age 9 in girls, and two or more years later in boys. Once begun, the hormone changes continue for several years (path A). The sole proximate cause of the physical changes of puberty is hormones (B), but the physical changes lag behind the hormone change (represented by path C). Paths A, B, and C are noncontroversial. Almost all developmental models of adolescent behavior by behav-

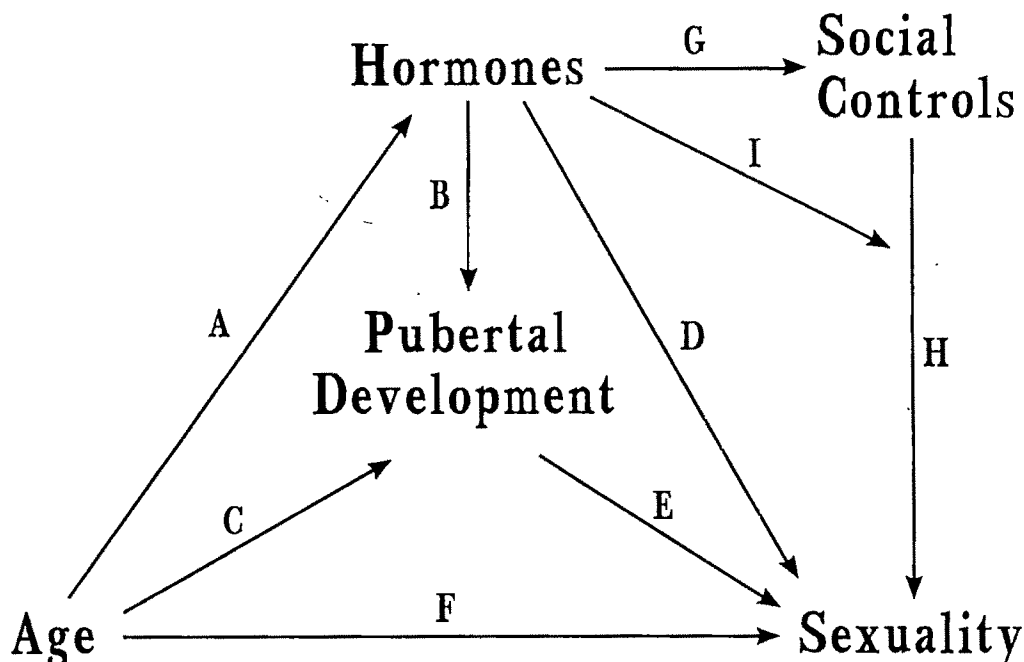


Fig. 1. Theoretical Biosocial Model

ioral scientists omit path D, the direct effects of hormones on behavior, and do not measure paths A and B. Path E is universally treated as a sociological/psychological effect of pubertal development on behavior. It is therefore a social effect in the theory, even though pubertal development is measured as a biological variable. Pubertal development is a sign of impending sexuality and maturity. It is socially interpreted as attractiveness to a potential sex partner. New behaviors are expected from those who are physically mature. The relative timing of puberty among adolescents of the same age has social consequences for psychological adjustment and the social responses of others.

Age itself, independent of physical maturation, has social significance. There are age-graded norms that control driving and drinking. Parents relax controls on an age-graded basis. Older adolescents are expected to be more socially mature. Path E net of path F should measure effects of pubertal development controlling for age, and, therefore, effectively measure the effects of differential development at the same age. But if path D is not measured, it is impossible to know whether paths E and F are measuring purely social effects or whether they are partially or completely spurious, merely representing direct hormone effects. Most developmental research that examines the effects of pubertal

development is subject to this problem, since it neither hypothesizes nor measures hormone effects.

In all models in this paper, I treat age and pubertal development as social variables. In the social models, their effects are not controlled for hormone effects, whereas in the biosocial models, the age and pubertal-development effects are "pure" social effects because they have been "purged" of direct hormone effects. I measure "direct" hormone effects by path D controlled for paths E and F.

A substantial amount of work has been devoted to the effects of pubertal development and its timing, where pubertal development is conceived as social stimulus (Simmons and Blyth 1987; Brooks-Gunn 1984; Brooks-Gunn, Petersen, and Eichorn 1985; Steinberg 1988). This work generally shows significant effects on many psychological variables as well as on social relationships with peers and parents. Because of the recognition that pubertal development may be indexing direct hormone effects, rather than or in addition to social-stimulus effects, recent work has turned to the simultaneous measurement of effects of pubertal development and hormones (Brooks-Gunn and Warren 1987; Udry et al. 1985, 1986; Nottelman, Susman, Dorn, Inoff-Germain, Loriaux, Cutler, and Chrousos 1987; Susman, Inoff-

Germain, Nottleman, Loriaux, Cutler, and Chrousos 1987). This work shows that it is possible to separate effects of age, pubertal development, and hormones.

Research Methods

This research uses cross-sectional data from a nonclinical representative sample of white eighth-, ninth-, and tenth-grade pupils in a public school system of a medium-sized southern U.S. city. In 1982, a random sample of 99 girls and 102 boys was drawn from a list of pupils in selected schools provided by the school district. The school district was selected on the basis of availability of a list of pupils. Comparisons of the sexual behavior of respondents in this district with national sample data for persons of the same age indicate similar levels of behavior on comparable sexual items. About 75 percent of those eligible agreed to participate and completed the study. Subjects ranged in age from 13 to 16, with a mean age of 14.

Questionnaires were self-administered at home with an interviewer present. Signed, informed consent was first obtained from a parent, then from the respondent. Ninth and tenth graders donated blood samples an average of three and a half months after completing the questionnaire, whereas eighth graders completed the questionnaire and donated blood at approximately the same time.

Blood samples were collected in the subjects' homes between 3 and 7 PM by a nurse, using a catheter that remained in place for about 30 minutes. Because there are short-term pulsatile releases of certain hormones into the blood, three 5-ml samples were collected at 15-minute intervals and pooled to provide an average hormone level over a 30-minute period. Boys provided blood samples at the first interview. At the initial interview, girls were asked to provide dates of last menses and were left a calendar on which to record subsequent menstrual events. By follow-up visits, nurses collected blood samples from each post-menarcheal girl to coincide with two phases of the next menstrual cycle. Since in females all hormones vary systematically with the menstrual cycle, a sample representing the follicular phase (before ovulation) was collected between cycle days 5 and 9, and another sample

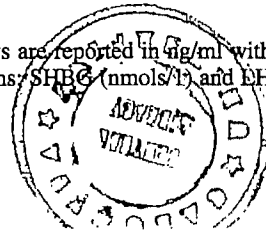
representing the luteal phase (after ovulation) was collected between days 18 and 23. Premenarcheal girls and those girls who did not menstruate during the next 60 days were dropped from the analysis of hormone data. Models containing hormone data in this paper are restricted to the 78 postmenarcheal girls for whom there were blood samples that could clearly be identified with each specified phase of the menstrual cycle. Subjects were paid \$25 per session in which blood was drawn. Blood samples were allowed to clot, the clot removed, and the remainder centrifuged. Serum was then stored at -20°C until assay.

Measurement of the Variables

Hormones. The following hormones were measured by radioimmunoassay: testosterone (T); sex hormone-binding globulin (SHBG); androstenedione (A); dehydroepiandrosterone (DHEA) and its sulfate (DHEAS); total estrogens (E); and progesterone.¹ (Details of the assays are available on request.) T is the most potent androgen, commonly believed to be related to libido in both males and females. SHBG is a large protein, which binds T, making it unavailable for action at the tissue level and which therefore affects the level of unbound T available for biological activity. A, DHEA, and DHEAS are weaker androgens partly of adrenal and partly of ovarian origin. The sulfation of DHEA to DHEAS reduces androgenicity, and therefore DHEAS should be inversely related to libido. LH is the hormone that precipitates ovulation. Estrogen is the primary hormone responsible for the development of maturation of secondary sexual characteristics in females except for pubic hair growth. Progesterone is the predominant hormone in the last half of the menstrual cycle and prepares the uterus for implantation of the fertilized egg. E, P, and LH are included for completeness, although they are not thought to have effects directly on libido in humans.

Social variables. The variables for the sociological models are derived from several social-science sources. First are what Hirschi calls traditional delinquency variables: intact

¹ All hormone assays are reported in ng/ml with the following exceptions: SHBG (nmols/l) and LH (mIU/ml).



families, age, family size, and SES. For intactness of family, I have two variables: presence of biological mother and presence of biological father. For family size, I have number of siblings. For SES, I have education of mother and father. To represent the four dimensions of Hirschi's social-control theory, I have at least one variable for each dimension. For beliefs, there is a sexual-permissiveness scale. For commitment to conventional action, I have importance respondent places on going to college. For involvement in conventional activities, I have involvement in school sports and church attendance. For attachment to conventional institutions, I have grades, importance of religion, and how much they like doing chores around the house, doing homework, and going to church (good-child index). These are not all variables used by Hirschi, but they seem appropriate in the context of this study.

Two important theoretical sources of social control on adolescent sexual behavior are friends and parents. To measure the encouragement of sexuality by the best same-sex friend, the respondent was given a Friend-encouragement scale. Unfortunately, I did not include in the questionnaire items on direct parental-control behavior. In a related study on an overlapping sample from the same schools, I used parental interviews to measure mother's control behavior, mother's religiosity, and mother's permissiveness with respect to premarital sex. None of these measures predicted the sexual behavior of their adolescents over the next two years (Udry and Billy 1987).

Age and pubertal development represent the age-graded aspect derived from problem-behavior theory (Jessor and Jessor 1977). Pubertal development may represent an attractiveness dimension or a maturity dimension. It is a physical manifestation that may elicit from the self and others a perception of maturity that is stronger than the effect of age, since age is not directly observable. The available variables capture only imperfectly the total content of theories of Hirschi and Jessor and Jessor. All variables are defined in the appendix.

Dependent variables. The dependent variables all measure various aspects of sexual behavior or internal sexual states: coitus, masturbation, sexual outlet in last month, noncoital sexual experience, intentions for

sex in the future, thinking about sex, and a turn-on scale measuring reported sexual responses to environmental stimuli. Distributions on these variables are presented in Table 1. Since all of these variables tap various aspects of the global concept of sexuality, an overall factor called Sexuality was constructed for each sex, using as elements the seven measured components listed above. This factor was extracted by the principal components method, without rotation, and the first factor as used. This factor had an eigen value of more than 2.5 for each sex, and each component loaded on the factor at least .45. The overall factor Sexuality extracts a vector containing the common variance of the seven components while stripping away the variance unique to each component. Factor loadings are quite similar for the two sexes. Definitions of the components of the overall factor are presented in the appendix.

Analytic Strategy

All statistical models used ordinary least

Table 1. Frequency Distribution for Components of SEXUALITY

VARIABLE	MALES		FEMALES	
	Frequency	Percent ^a	Frequency	Percent ^a
Ever had intercourse				
0	66	65	68	86
1	35	35	11	14
Ever masturbated				
0	68	67	53	74
1	32	32	19	26
M ^b	1	1		
Outlet last month				
0	66	65	61	87
1	28	28	9	13
M	7	7		
Turn-on index				
0-3	22	22	25	32
4-6	46	45	29	37
7-10	33	33	25	32
Think about sex				
1-2	13	13	18	23
3-4	27	27	38	49
5-7	61	60	22	28
Future sex				
3-4	8	8	27	34
5-7	21	21	24	30
8-13	72	71	28	35

^a Rounding causes percents to sum to other than 100.

^b Missing. In computing Sexuality factor scores, means were substituted for missing values.

squares regression. The criterion for statistical significance was set at $\alpha < .05$, in spite of the small sample size. Since the hypotheses specify the sign of the coefficient, one-tailed tests were used throughout. I used the following analytic strategy: (1) Construct a sociological model for each sex. The original plan called for treating age and pubertal development as exogenous variables, entered first into a regression. Second, family-structure variable would be entered, and the remaining social variables, treated as endogenous to family structure, age, and pubertal development, would be entered next, in a hierarchic model. However, none of the family-structure variables enters the sociological model. To be added to the model, the remaining social variables were originally required to add significantly to the variance explained by age and pubertal development. As it turned out, any variable significant at the zero order also added to explained variance after age and pubertal development were in the model. Therefore, model construction was simplified. The sociological model was constructed by screening correlations of the individual sociological variables for those significant at the .10 level and backward deleting a model containing the screened variables. (2) Construct a biological model for each sex by the same procedure, using the hormone measures. (3) Construct an additive biosocial model. Add social variables one at a time to the biological model. Those significant at the .10 level are saved and added to the best hormone model. Variables are then removed by backward deletion until all remaining variables meet the significance criterion. This represents the additive biosocial model. (4) Screen all interactions between T (or SHBG) and each social variable in the additive biosocial model. Add the interaction terms to the additive model. Trim the model of variables not meeting the significance criterion unless they are main-effects terms associated with a significant interaction term. Because T is not interpretable without SHBG also in the model, and because SHBG has no biological effect other than its binding of T, when one is in the model, both are in, irrespective of the fact that one may be nonsignificant.

Table 2. Sociological Models Predicting Sexuality

<i>BOYS</i> ($N=93$, $R^2=.52$; Adj. $R^2=.49$)					
	<i>b</i>	<i>s.e.b</i>	<i>B</i>	<i>T</i>	<i>p</i>
Age	.22	.10	.18	2.09	.02
Pubertal development	.17	.09	.16	1.81	.04
Good child	-.07	.04	-.13	-1.83	.04
Permissiveness	.29	.04	.48	6.01	.00
Friend encouragement	.15	.08	.15	1.86	.03
<i>GIRLS</i> ($N=94$, $R^2=.34$; Adj. $R^2=.32$)					
Pubertal development	.26	.09	.26	2.92	.00
Importance of religion	-.25	.11	-.21	-2.36	.01
Permissiveness	.20	.05	.37	4.17	.00

Results²

Sociological models. Sociological models are shown in Table 2. The sociological model for boys' Sexuality is quite a satisfying model. It contains three social control variables (Good Child, Permissiveness, and Friend Encouragement) age, and pubertal development. The model explains 49 percent of the variance in Sexuality. The girls' model is less strong, but still explains 32 percent of the variance.

Biological models. The biological models are presented in Table 3. The boys' model contains only T effects (two variables) and explains 47 percent of the variance. The girls' model adds two weaker androgens and explains 14 percent of the variance. For each sex, the strongest contributor is T. It is instructive to examine the regression coefficient

² This paper should be set in the context of three previous publications from the same research program. The first publication (Udry et al. 1985) shows for the first time that there are strong hormone effects on each of the components of Sexuality for boys and that the zero-order effects of age and pubertal development are spurious. The second paper (Udry et al. 1986) shows that there are significant but weaker hormone effects on each of the components of Sexuality for girls except coitus, for which there are no hormone effects. These two papers are based on the same data set as the present paper. The third paper (Udry and Billy 1987) uses a larger data set (which includes the grade 9 and 10 respondents from the present data set) with a panel design. It shows that there are strong and widespread sources of social control on girls' transitions to coitus, but that these are virtually absent for boys. The purpose of the present paper is to provide an integrated analysis of the general concept *Sexuality*. I extend the previous conceptualizations to explore three types of relationships between social-control variables and hormonal variables: additives, indirect, and interaction effects.

Table 3. Biological Models Predicting Sexuality

<i>BOYS</i> ($N=97$, $R^2=.48$; Adj. $R^2=.47$)					
	<i>b</i>	<i>s.e.b</i>	<i>B</i>	<i>T</i>	<i>p</i>
T	.17	.03	.47	6.10	.00
SHBG	-.03	.005	-.40	-5.19	.00
<i>GIRLS</i> ($N=74$, $R^2=.19$; Adj. $R^2=.14$)					
Fo T	.77	.24	.37	3.15	.00
Fo SHBG	-.005	.004	-.13	-1.18	.12
Fo DHEAS	-.32	.17	-.23	-1.89	.03
Lu DHEA	.07	.03	.27	2.37	.01

cients of T for each sex. This shows a "dose-response" relationship to T that is five times as strong for girls as it is for boys. The girls have a mean T of .60 ng/ml (S.d. = .42), compared to 4.98 ng/ml (S.d. = 2.56) for boys. So although boys have on average eight times as much T at this age as girls, a little increase in girls' T has a big effect on Sexuality. This parallels our finding on personality reported elsewhere (Udry and Talbert 1988).

Biosocial models. Biosocial models are shown in Table 4. The boys' biosocial model is dominated by T effects. Once T effects are in the model, age and pubertal development disappear. By the logic of Figure 1, this means that age was in the sociological model only because T increases with age, not because of age-graded controls. Pubertal development was in the sociological model not because it stands for attractiveness, or even maturity, but because T causes pubertal development. The effect of pubertal development is therefore spurious. Only permissiveness is retained from the sociological model; it adds 12 percent variance explained to the 47 percent already explained by T effects. There are no interactions.

The biosocial model for girls is more complicated. T effects remain strong. Both

hormones that are significant in the simple biological model remain. Two variables from the sociological model remain, with their effects unchanged. For girls, pubertal development remains to represent an attractiveness effect, in contrast to the boys' model. An interesting aspect of the model is the interaction of T and sports. For girls who do not participate in sports, T has a strong effect on Sexuality. For girls who do participate in sports (about 40 percent), T has no effect on Sexuality. Thus, it appears that sports participation suppresses the effect of T on Sexuality. Consequently, even though the girls who are participating in sports have a higher mean T level than nonparticipants, their mean Sexuality is (insignificantly) lower. Left unexplained is the path to sports participation. Why do some girls choose sports?

A further significant interaction was found that could not be entered into the biosocial model with other variables because of collinearity problems. There is an interaction of T and father presence that affects Sexuality. It is virtually independent of the sports/T interaction. This interaction shows that for girls without fathers present in the household, there is a very strong effect of T on Sexuality. This relationship is suppressed among girls with fathers, although it is still not zero. Unfortunately, only 17 of the girls in our sample lack fathers in the household, so the R^2 of their T/Sexuality relationship (.51), although very highly significant, must be interpreted cautiously.

The overall R^2 of the girls' biosocial model is more than twice that of the biological model, indicating that the sociological variables and the interaction account for more than half of the variance explained.

Results for Component Dependent Variables

The dependent variable Sexuality, although statistically capturing the intuitive global meaning of the term, contains components that are quite disparate in actual behavior. For example, intercourse is a highly proscribed behavior for early adolescents, but it is certainly permissible for adolescents to think about sex. It could be argued that social controls are meant to control behavior, not thoughts and feelings, and that therefore our composite Sexuality is an inappropriate dependent variable. For coitus, there is a strong

Table 4. Biosocial Models Predicting Sexuality

<i>BOYS</i> ($N=97$, $R^2=.61$; Adj. $R^2=.59$)					
	<i>b</i>	<i>s.e.b</i>	<i>B</i>	<i>T</i>	<i>p</i>
T	.14	.02	.40	5.86	.00
SHBG	-.02	.005	-.29	-4.17	.00
Permissiveness	.24	.04	.39	5.57	.00
<i>GIRLS</i> ($N=74$, $R^2=.47$; Adj. $R^2=.42$)					
Fo T	.84	.22	.41	3.70	.00
Fo SHBG	.00	.004	.01	.13	.45
Lu DHEA	.06	.02	.23	2.61	.00
Sport	.52	.28	.29	1.85	.04
Fo T \times Sport	-1.30	.41	-.49	-3.15	.00
Pubertal development	.24	.10	.22	2.38	.01
Permissiveness	.22	.05	.42	4.55	.00

sociological model and no hormone effects for girls, whereas for boys the hormone effects are strong, with little effect of sociological variables (Udry et al. 1985, 1986; Udry and Billy 1987). For Future Sex, a composite variable of intentions and desire for coitus in the next year, one might expect more nearly equal effects of biological and sociological variables.

The biosocial models for Future Sex are shown in Table 5. Although the simple biological model for boys is the same as for Sexuality and explains about 23 percent of the variance, the biosocial model explains 53 percent, with church attendance and permissiveness strong contributors. The girls' simple biological model for Future Sex predicts 31 percent of the variance. The biosocial model explains 50 percent of the variance, with a strong contribution from Permissiveness.

Summarizing the effects on the component variables, there are strong biological and weak sociological effects on coitus for boys, whereas the effects on subjective sexual variables are more balanced. For girls, there are balanced biological and sociological effects on subjective sexual variables, but for the most strongly sanctioned behavior (coitus), hormonal effects disappear, and only sociological variables control.

For girls, the biosocial interactions of T with sports and father presence show that where social controls are strong, the relationship between androgenic hormones and sexuality is suppressed. Where they are weak, the relationship between androgenic hormones and sexuality is strong. The social controls act as suppressors of the effects of hormones on behavior.

Table 5. Biosocial Models Predicting FUTURE SEX

BOYS ($N=97$, $R^2=.55$; Adj. $R^2=.53$)					
	<i>b</i>	<i>s.e.b</i>	<i>B</i>	<i>T</i>	<i>p</i>
T	.21	.09	.18	2.33	.01
SHBG	-.03	.02	-.13	-1.67	.05
Church Attendance	-.63	.22	-.21	-2.81	.00
Permissiveness	1.07	.16	-.50	6.26	.00
GIRLS ($N=74$, $R^2=.55$; Adj. $R^2=.50$)					
Fo T	1.18	.65	.17	1.81	.03
Fo SHBG	-.01	.01	-.06	-.65	.26
Fo A	.26	.11	.24	2.42	.01
Fo DHEAS	-1.02	.45	-.22	-2.27	.01
Lu DHEA	.22	.07	.26	2.92	.00
Fo LH	-.08	.04	-.17	-1.96	.03
Permissiveness	.83	.16	.47	5.16	.00
Friend encouragement	.42	.25	.15	1.70	.05

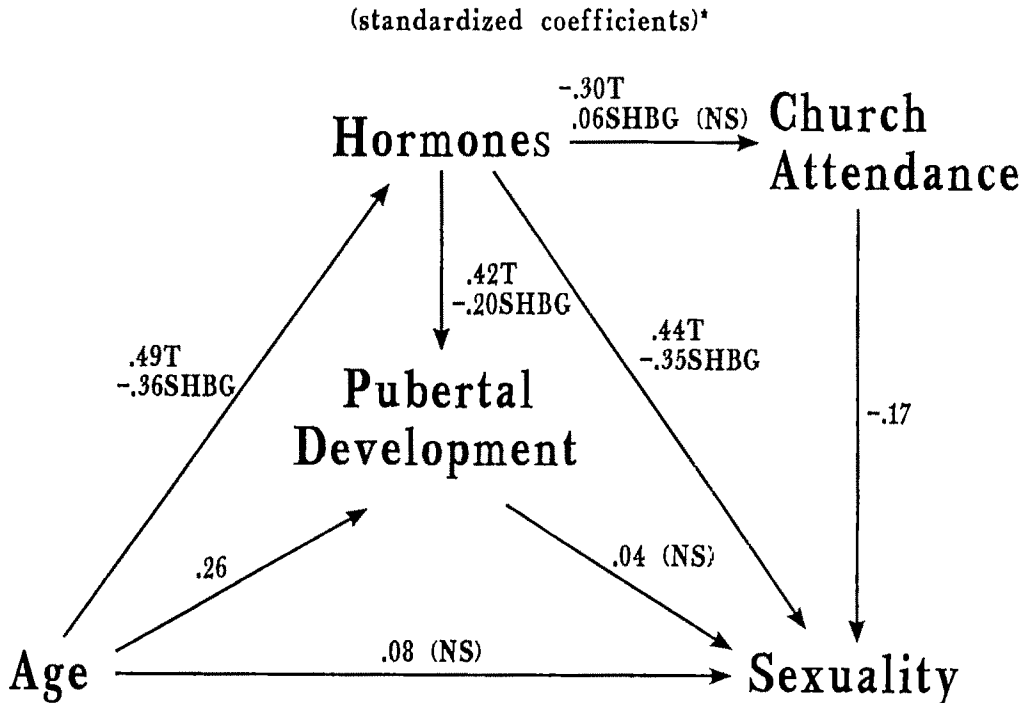
Indirect Effects of Hormones

There are significant inverse relationships between boys' (but not girls') androgens and the three variables having religion components (Good Child, Importance of religion, and Church attendance). At the zero order, each of these variables also predicts Sexuality. Is it possible that androgens can discourage religious commitment in boys? Suspending disbelief, I submit the simplified path model in Figure 2, as an example of possible indirect effect of hormones through a social-control variable. Figure 2 shows (assuming we accept the causal arrows) that there is a statistically significant indirect effect of T on Sexuality through its effect on church attendance. If the causal arrow from church attendance to sexuality is reversed, the path remains significant, this time implying that androgens increase sexuality, indirectly leading to a reduction in church attendance, which is not theoretically unthinkable. Far more complicated research designs will be necessary to identify the causal direction. In any case, Figure 2 illustrates the point made by Rowe and Osgood (1984) that social-control theories are consistent with exogenous individual biological differences.

DISCUSSION

Our results provide preliminary support for the possibility that some sociological problems are better understood when a biosocial theory is brought to bear. A sociological model of social control leads to a reasonably convincing explanation of the control of sexual behavior. A separate biological model also produces convincing results. But the combination of these in a biosocial model produces results that are far more interesting than either alone and leads to new insights concerning social influences. By either sociological or biological standards, the models are unusually strong. Most models explain about half the variance in the dependent variables.

The analysis shows three different types of effects in biosocial models. In general, we find additive effects of biological and sociological effects. For girls, we showed interaction effects indicating that social control sometimes suppress the effects of androgens. For boys, we found that there are sometimes indirect effects of hormones through social-control variables. For both sexes, biosocial



*Coefficients are significant at .05 except as noted (NS)

Fig. 2. Path Model Showing Indirect Hormone Effect

models reveal that some of the effects in sociological models are spurious.

Threats to Validity

One threat to validity that does not plague this study is the possibility of the respondents deliberately "creating" a relationship between the hormone variables and their reports of sexual behavior. Respondents cannot know their own hormone levels, and the relationship of hormones to the dependent variables cannot be contaminated with instrumental effects such as questionnaire-response bias.

A second validity threat is the possibility that hormones are affected by sexual stimulation. If so, either I have the causal order backwards, or the hormone/behavior relationship is nonrecursive. In many species, androgen levels in males are elevated after copulation (Feder 1984). The one study on human females (LaFerla, Labrum, and Tang 1980) shows no effects of sexual stimulation. In human males, the most definitive studies show no effects of sexual stimulation on androgen levels (Davidson 1980). The few studies that do show effects show return to baseline levels of androgens within a period

of one hour to one day (Kraemer et al. 1976; Pirke, Kockott, and Dittmar 1974). It is improbable that such effects would affect my data, since frequencies of coitus far above the level observed in this study would be necessary to maintain high androgen levels. Nevertheless, the causal order cannot be empirically demonstrated from these cross-sectional data.

This research should be considered a preliminary exploration rather than a definitive and well-specified test of a general theory. It is cross-sectional and therefore only suggestive of causal relationships. It is based on subjects from a single school district. Although the distribution of the independent and dependent variables is similar to that obtained from other populations, no claim to representativeness of a broad population is justified. The subjects are from a narrow age range, and there is no justification for generalizing to other age groups. The empirical representation of social-control theories lack variables that have been shown to be important in other research. Small sample size precludes more detailed analysis of subgroups. The dependent variable Sexuality would have been improved had all compo-

nents referred to current behavior. Examination of interactions presents possibilities of chance findings, whereas the small sample size may cause us to miss relationships of moderate importance but not statistically significant at this sample size. (On the other hand, such a study is unlikely ever to be attempted on a nationally representative sample of thousands). The representation of biological effects is rudimentary. The design does not allow examination of genetic, nonhormonal effects. It omits nonsteroidal hormones and a whole array of neurotransmitters known to have behavioral effects.

Implications. Once the sociologist accepts the premise that hormones affect behavioral predispositions, all the findings make perfectly good sociological sense. Although the sociological models make male and female sexuality look like they are controlled by the same processes, the biosocial models show that boys and girls are not to be understood by the same models. Almost half the variance in boys' Sexuality is explained by the effects of testosterone. In the future, it seems pointless for any social-science researcher to attempt to explain male adolescent sexual behavior unless the research design includes measures of testosterone effects. Hormonal effects on adolescent females may be broader and more subtle, more subject to biosocial interaction effects.

Biological factors have been demonstrated to explain individual differences across a wide spectrum of human behaviors, including sexual behavior, sex role-related behaviors in women (Purifoy and Koopmans 1980), juvenile deviance (Rowe and Osgood 1984; Udry unpublished), alcohol use, mental illness, and normal personality (Udry and Talbert 1988; Daitzman and Zuckerman 1980). Most of these behaviors are also the subject of social-science theories. Social scientists have mostly responded to the biological challenge in what they consider their own domains by argument (for example, Hubbard 1982). Some sociologists have argued that it is not the business of sociology to explain individual differences, but to explain differences based on group membership. Even this argument does not avoid the issue, since group membership may be a consequence of biologically based individual differences in behavioral predispositions (or even abilities) that select people into groups. Where evidence exists that the behavior of interest may have biological components, including biolog-

ical variables in sociological models may produce new insights into social processes.

APPENDIX DEFINITION OF VARIABLES

I. *Dependent Variables*

Coitus. Sexual intercourse was defined, and respondents were asked if they had ever had sexual intercourse.

Masturbation. Masturbation was defined, and respondents were asked if they had ever masturbated.

Outlet. Respondents were asked how many times they had masturbated in the last month, and how many times they had had coitus in the last month. The two responses were summed.

Sexual Experience. Respondents were asked about 11 different heterosexual behaviors (from holding hands and kissing to feeling unclothed sex organs of the opposite sex). For each behavior they indicated whether they had never, once or twice, or more than twice, experienced the behavior. These responses were factored by principal components, and the first unrotated factor used to construct a factor score. Factor scores have a mean of zero and a standard deviation of one.

Turn on. Respondents were given a list of 11 potentially sexually arousing stimuli and asked, "Are you turned on sexually by . . .?" Responses were: often, sometimes, never. Responses scores were summed.

Think about sex. Respondents were asked, "How often do you think about sex?" Seven responses were provided from: (1) never, to (7) 10 or more times a day.

Future Sex. Respondents were asked three questions: (1) "How likely is it that you will have sex in the next year?" 1 = sure it wouldn't happen, to 5 = would happen for sure; (2) "How much do you think you would like to have sex in the next year?" (5 = like very much, to 1 = dislike very much); (3) "Do you intend to have sex during the next year?" (3 = yes; 2 = don't know; 1 = no). The answers to these three questions correlated from $r = .57$ to $.69$ and correlated similarly with the dependent variables. They were assumed to be tapping the same underlying motivation for sex and were summed to create an additive index.

Sexuality. A factor score derived from a factor analysis containing the seven components listed above.

II. *Independent Variables*

Age. Age was calculated to two decimal places by subtracting reported birth date from interview date.

Pubertal Development. Respondents rated themselves on level of pubertal development as registered through a battery of discrete items. These included a

set of Tanner-type line drawings (Tanner 1962) representing the degree of pubic hair and breast or genital development. Each person also indicated on separate items the development of body hair, facial hair, voice change, body-shape change, and menarche, as appropriate by sex. These items were factor analyzed separately by sex, and a single factor was extracted. Factor scores were assigned to individuals on the basis of the factor weightings of the items. This score has a mean of zero and a standard deviation of one. The self-measurement of pubertal development was validated in a separate study (Morris and Udry 1980), in which pediatricians rated adolescents on a battery of nearly identical items for which adolescents had already rated themselves. Factor scores from physicians and adolescents correlated $r = .74$ for males and $.82$ for females.

Father presence. Respondent indicated whether biological father lived in the household. 1 = yes, 0 = no.

Mother presence. Respondent indicated whether biological mother lived in the household. 1 = yes, 0 = no.

Mother's education. Mother's report of her years of completed education, or if missing, adolescent's report of mother's education.

Father's occupation. Adolescent's report of father's occupation, classified on the following metric: (5) professional; technical; (4) manager, official, proprietor; (3) clerical, sales, kindred; (2) skilled worker; (1) unskilled worker.

Grades. Respondent was asked, "What grades do you usually get?" Responses were coded: (1) below average; (2) average; (3) above average.

Church Attendance. Respondent was asked, "How often have you gone to church services in the past year?" Responses were coded: (1) less than once a month; (2) about once a month; (3) about once a week; (4) more than once a week.

Importance of Religion. Respondent was asked, "How important is religion to your daily life?" Responses were coded: (1) not important; (2) slightly important; (3) important; (4) very important.

Number of Siblings. Respondent indicated who lived in the household. Number of brothers and sisters was counted.

Sports. Respondent was asked, "Do you play any sports or participated in any organized physical activities outside of gym class?" 1 = yes, 0 = no.

Importance of College. Respondent was asked, "How important is it to you that you go to college?" Six responses from: (1) not important to (6) very important.

Good Child. Respondent was asked, "How much do you like: doing chores around the house?"; "... doing homework?"; "... going to church?" Responses were: (1) do not like at all, to (4) like a lot. Responses were summed.

Sexual Permissiveness. Respondent was asked to indicate agreement level with seven statements of conservative beliefs. (Sample items: "It is important

to me that my wife has not had sex before we get married"; "I would not respect a girl who had sex with someone she did not love." Responses were: (1) strongly agree, to (5) strongly disagree. Responses were summed.

Friend Encouragement. Respondent was asked five questions concerning whether the best same-sex friend encouraged respondent's sexual interest and activity. Responses were yes/no. Sample item: best friend "encourages me to be more sexually active." Items were summed in the direction of encouragement (one point for each item).

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CROSS-NATIONAL VARIATION IN OCCUPATIONAL DISTRIBUTIONS, RELATIVE MOBILITY CHANCES, AND INTERGENERATIONAL SHIFTS IN OCCUPATIONAL DISTRIBUTIONS*

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Krauze and Slomczynski (1986a) have proposed a non-negative decomposition of observed frequencies in a social mobility classification into "circulation" and "structural" components. In the present paper, we show that the Krauze-Slomczynski decomposition fails to satisfy minimal methodological requirements for cross-national comparisons. We explain why this decomposition cannot be used to test the Featherman-Jones-Hauser hypothesis of cross-national similarity in relative mobility chances. We also identify several questionable procedures in the empirical work of Slomczynski and Krauze (1987) and show how these procedures have affected their conclusions. In the second part of our paper, we discuss some advantages of the recently proposed Sobel-Hout-Duncan model in partitioning marginal effects in a mobility classification and use this model to embed the explanation of marginal effects in an illustrative analysis of cross-national variation in patterns of mobility. The results suggest that both economic and political development can reduce the strength of symmetric interactions between occupational origins and destinations. In addition, economic development increases asymmetric flows by upgrading and reshaping the occupational structure, whereas political development produces a net slowdown in some types of structurally induced mobility.

The Featherman-Jones-Hauser hypothesis states that variations in intergenerational

mobility within industrial nations emerge from historical or cultural differences in their occupational structures, but not from differences in their relative chances of social mobility (Featherman, Jones, and Hauser 1975, p. 340). This hypothesis, labelled the FJH revision by Erikson, Goldthorpe, and Portocarero (1979), leads to the prediction that mobility chances are "basically the same" once variations in origin and destination distributions have been controlled. The FJH revision has helped to motivate and guide comparative analyses of social mobility carried out over the last decade (see McRoberts and Selbee 1981; Erikson, Goldthorpe, and Portocarero 1982, 1983; Hope 1982; Portocarero 1983; Pontinen 1983; Hauser 1984a, 1984b; Utrecht Mobility Seminar 1985; Goldthorpe 1985; Erikson and Pontinen 1985; Kerckhoff, Campbell and Winfield-Laird 1985; Wanner 1986; Erikson and Goldthorpe 1987a, 1987b; Ganzeboom, Luijkx, Dessens, P. de

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Graaf, N.D. de Graaf, Jansen, and Ultee 1987).

However, from the very beginning, researchers have found systematic differences among countries within the generic mobility regime specified by the FJH hypothesis. Indeed, in the original article proposing the hypothesis, Featherman, Jones, and Hauser (1975, p. 339) found that "the bivariate process of mobility in Australia and the U.S. in the mid-1960s was largely the same, with minor but significant idiosyncratic patterns, originating in the main from the unique mobility patterns of men from farm origins." In the 1980s, comparative analyses have continued to identify a common pattern of social fluidity, which has served both as a generic description of intergenerational mobility and as a baseline for the specification and explanation of cross-national variation in mobility (Erikson et al. 1982; Grusky and Hauser 1984; Erikson and Goldthorpe 1987c; Yamaguchi 1987).

The central methodological feature of this work has been the development of loglinear and logmultiplicative models, which make it possible to compare relative mobility chances between classifications whose marginal distributions are different. These models solved the fundamental methodological problem of comparative mobility analysis as it was posed, for example, in the pioneering work of Rogoff (1953), Glass (1954), and Carlsson (1958). Neither the original statement and test of the FJH hypothesis nor any of the subsequent research in this tradition has depended on a decomposition of the marginal or internal frequencies in a mobility classification into components of "circulation" or "structural" mobility.

Slomczynski and Krauze (1987) have rejected this paradigm of comparative mobility research. In its place, they propose a variant of their decomposition of frequencies in a mobility classification into non-negative components of immobility, circulation mobility, and structural mobility (Krauze and Slomczynski 1986a). Using a standard set of 16 3×3 national mobility classifications (see Grusky and Hauser 1983, 1984; Hazelrigg and Garnier 1976; McClendon 1980a, 1980b), Slomczynski and Krauze compare intercountry differences in "total mobility" and "circulation mobility" by computing sets of Euclidean distances for relative frequencies, inflow and outflow proportions, and row by column odds ratios. In

each case, they conclude that differences among nations in circulation mobility, so conceived and measured, are greater than those in total mobility. This set of results supposedly contradicts the FJH hypothesis and previous tests of it, which are said to be "indirect" in comparison with their "direct" tests.

Slomczynski and Krauze then carry out similar decompositions and tests in a larger, revised set of mobility tables for 22 nations. They report a correlation analysis relating measures of economic development, agricultural production, and traditionalism to a pair of odds ratios constructed by collapsing categories in their circulation mobility matrices. Again, the findings are said to contradict the FJH hypothesis, and the paper concludes that it "should be rejected" (p. 610).

Slomczynski and Krauze do not test the Featherman-Jones-Hauser hypothesis. In the first part of this paper, we show that they misrepresent the content and history of the hypothesis, that their decomposition cannot meet fundamental methodological requirements of comparative mobility analysis, and that their use of similarity comparisons to test the FJH hypothesis is logically incorrect. In addition, we identify questionable procedures in their empirical work and show how their results are distorted by including the main diagonal in their "circulation" matrices.

At the same time, Slomczynski and Krauze do pose an interesting question: How can differences in occupational distributions and shifts in such distributions be incorporated in comparative mobility analysis? In the second part of this paper, we discuss some advantages of the Sobel-Hout-Duncan (1985) model in decomposing the marginal effects in a mobility classification and show how the explanation of these effects can be embedded within a model of cross-national differences in relative mobility chances.¹

¹ Sobel, Hout, and Duncan (1985) have proposed a class of mobility models that fit parameters for marginal shifts in mobility classifications. Such models have been applied in analyses of mobility trends in the U.S. (Hout 1988a), in comparisons of mobility in the Republic of Ireland and in Northern Ireland (Hout 1988b), in a comparison of mobility in the U.S. and Canada (Wanner 1986), and in an analysis of economic mobility in nine Common Market countries (Ultee and Luijkx 1986). Our analysis, like that of Ultee and Luijkx, extends these models by using exogenous variables to

WHAT IS THE FJH HYPOTHESIS?

The most obvious problem with the Slomczynski-Krauze (1987) paper is its misleading representation of the structure and history of the FJH hypothesis. Indeed, there is no basis for the claim that their decomposition provides a "direct test" of this hypothesis (p. 600) or refers to its "original formulation" (p. 599). Those with no previous acquaintance with this area of research might easily conclude from Slomczynski and Krauze (pp. 598–600) that Featherman, Jones, and Hauser developed their hypothesis without using loglinear or multiplicative modeling. According to Slomczynski and Krauze, researchers were actually *departing* from the original intent of Featherman, Jones, and Hauser when they applied loglinear models to test an "indirect" operationalization of the hypothesis:

Various researchers have subsequently used a new terminology that changes the meaning of the original formulation. Some departures involve searching for invariance in social fluidity instead of attempting to compare the similarity of circulation-mobility patterns with the similarity of total-mobility patterns. . . . The intractability of the problem has led some researchers to equate certain characteristics of statistical association with circulation mobility. In consequence, the FJH hypothesis became understood as a statement about fluidity in observed mobility instead of being concerned with patterns of circulation mobility. In this paper we refer to the original formulation of the FJH hypothesis . . . (Slomczynski and Krauze 1987, pp. 598–99).

Nothing could be further from the truth.² We strongly agree with Slomczynski and Krauze that the meaning of the hypothesis "is imputed by the theoretical and methodological context in which it appears" (1987, p. 598), but we disagree with their description of that context. Featherman, Jones, and Hauser made no at-

account for the shape of marginal distributions and intergenerational shifts in them.

² It is awkward to base these observations on a close reading of the original text since Hauser is a coauthor of the FJH hypothesis. Hauser never intended anything of the sort that Slomczynski and Krauze propose, and he asked them on several occasions not to make this attribution. Jones and Featherman (personal communication) have also expressed their disagreement with the Slomczynski-Krauze interpretation of Featherman, Jones, and Hauser (1975).

tempt to construct any decomposition of mobility frequencies. They initiated the use of loglinear models in this context. These loglinear analyses revealed that "the bivariate process of mobility in Australia and the U.S. in the mid-1960s was largely the same" (p. 339), and their "provisional hypothesis" was stated as an extension of this finding. The meaning of the FJH hypothesis never shifted in consequence of the development of loglinear models, but in fact those models were the basis of the hypothesis from its inception.³

If this is the case, how could Slomczynski and Krauze have been misled about the meaning of "circulation" and "structural" mobility in the context of the FJH hypothesis? One interpretation of Slomczynski and Krauze is that the authors have been confused by the several usages of "structural" and "circulation" mobility in the works on which they have drawn, and they mistakenly focused their efforts on a tangential issue in that work. To be sure, Featherman, Jones, and Hauser used the term, "circulation mobility," in referring to their hypothesis:

. . . once differences in the respective occupational opportunity structures have been taken into account, the *pattern of circulation mobility* [emphasis added] is basically the same. We therefore venture a new, provisional hypothesis to replace the falsified Lipset-Bendix hypothesis about total rates of mobility. This new hypothesis differs in that it is specified in terms of *circulation mobility* [emphasis in the original], and states the genotypical pattern of mobility (circulation mobility) in industrial societies with a market economy and a nuclear family system is basically the same (p. 338).

The referent of "the pattern of circulation mobility" here is self-evidently the odds ratios in mobility classifications (not some set of frequencies of "circulation mobility"), since the hypothesis is stated in the context of their findings of similarity in odds ratios between Australia and the U.S., as well as their review of parallel findings of temporal invariance in the U.S. and in Great Britain.

Slomczynski and Krauze apparently draw upon another usage of the term in the same work, the traditional decomposition of total mobility into "net," "minimum," or "struc-

³ Although we focus on the original FJH paper, Slomczynski and Krauze draw on later statements by others to describe the "original formulation" of the FJH hypothesis.

tural" mobility and a residual, "circulation" mobility (Featherman et al. 1975, pp. 336-37).⁴ It is unfortunate that the terms *circulation* and *structure* were each used in more than one way, and we wish that they had not been. Even so, we can find no textual justification for the Slomczynski-Krauze interpretation of the FJH hypothesis or for their operational measures of circulation and structural mobility. We note, first, that Featherman, Jones, and Hauser enclosed the term *circulation* in quotations when they referred to the residual term in the traditional decomposition, in reference to its use with that meaning by Broom and Jones (1969). It was only after their discussion of the traditional decomposition that Featherman, Jones, and Hauser raised the question, "Are the ANU [Australian] and OCG [American] matrices the same or different?" (p. 337). Second, in their description of the results with this decomposition, Featherman, Jones, and Hauser emphasized differences between the Australian and American mobility regimes (pp. 336-37). If the traditional decomposition had been the basis of their provisional conclusions, why was the FJH hypothesis about cross-national similarities in patterns of social mobility? Third, even if one thought the FJH hypothesis referred to this decomposition, it does not follow that Featherman, Jones, and Hauser ever intended a partition of the full classification of mobility frequencies into components of "circulation" and "structural" mobility. In fact, under the traditional distinction between gross and net mobility, no decomposition of the full set of mobility frequencies is either entailed or implied. Fourth, in a paper predating the FJH hypothesis, Hauser, Dickinson, Travis, and Koffel (1975) showed that the measures of "net mobility" and "total minus net mobility" should not be used in comparative analysis because they are affected by multiplicative transformations of marginal distributions. In that context, why would these traditional measures have been proposed as tools of comparative analysis?

Slomczynski and Krauze (p. 600) carry their terminological confusion a step further and make a serious error by presuming that the parameters estimated under various loglin-

ear models can be used to reconstruct "circulation" frequencies. They cannot, nor do we think anyone ever supposed otherwise. Models of two-way interaction have been used in mobility classifications to represent hypotheses of constant "circulation," but this usage neither entails nor requires any decomposition of mobility or immobility frequencies into components due to "circulation" or "structural" change in the sense in which Krauze and Slomczynski (1986a) use those terms. The expected frequencies under such models are not estimates of "circulation mobility"; they are estimates of mobility and immobility under a specific hypothesis, namely that relative mobility chances have remained constant when marginal (origin and destination) distributions have changed.

In summary, the definitions of "circulation" and "structural" mobility proposed by Slomczynski and Krauze are so different from and incompatible with those adopted (and fully justified) in the initial statement of the FJH hypothesis and in a large body of subsequent research that Slomczynski and Krauze are not free to draw upon that work to justify their own. Given the original text and the subsequent history of the FJH hypothesis, we cannot understand why they claim to have returned to the "original formulation" of Featherman, Jones, and Hauser.

Autonomy and Invariance

We need not discuss the face validity of the decomposition of mobility frequencies proposed by Krauze and Slomczynski, since Sobel, Hout, and Duncan (1986) have convincingly made the case that such decompositions are vastly inferior to modern methods of structural modeling. However, we have sought to determine whether the Krauze-Slomczynski decomposition meets two simple requirements of valid cross-national comparisons: autonomy and invariance.

If the parameters of a model are *autonomous*, we can make hypothetical predictions by changing a subset of the parameters and recalculating expected frequencies. In an identified loglinear model, for example, we can change one or more marginal or interaction effects, compute the corresponding set of expected frequencies, and recover the revised parameters by refitting the model. This property makes it possible for researchers to answer counterfactual questions of the form,

⁴ Net mobility is given by the index of dissimilarity between origin and destination distributions.

"What would mobility in Country A look like if it had the same relative mobility chances as Country B?"

It is also important that the parameters of fluidity, association, or circulation be independent of the parameters of the occupational structure. For example, under the loglinear model, odds ratios are *invariant* with respect to scalar multiplication of entire rows or columns. Consequently, many marginal (origin or destination) distributions are consistent with a given set of row-by-column odds ratios, and many sets of odds ratios are consistent with a given set of marginals. The absence of this invariance property was one of the critical flaws of the social distance mobility ratio (Rogoff 1953; Hauser 1978), yet Krauze and Slomczynski (1986b, p. 292) dismissed the observation by Sobel, Hout, and Duncan (1986) that their decomposition was not marginally invariant.

If the components of the Krauze-Slomczynski decomposition were autonomous, it would be possible to vary "circulation mobility" and "structural mobility" freely without changing the other and recover the revised components from their sum. It is easy to show that the Krauze-Slomczynski decomposition does not have this property. Consider panel A of Table 1, where we have presented the original Polish data from Krauze and Slomczynski (1986a, p. 258) and reproduced their analysis. The first column of numbers gives relative counts of "circulation mobility"; the second column gives relative counts of "structural mobility"; and the third column reports the observed relative counts in the source table. As shown in panel A, the decomposition yields no downward structural moves between white- and blue-collar strata in Poland; it yields 68 upward structural moves between those two categories. In panel B, we reversed the "structural" mobility frequencies in cells C_{13} and C_{31} by placing 68 fewer movers in C_{31} and 68 more movers in C_{13} . The revised data are shown in column 3. Under this simple manipulation, the estimates of "structural" mobility used to construct the revised classification are not recovered, "circulation" mobility changes in three of the six cells, and the total estimate of "circulation" mobility changes markedly. It follows that the Krauze-Slomczynski decomposition is not autonomous.⁵

Table 1. Tests of Autonomy and Invariance of the Krauze-Slomczynski Mobility Decomposition

Cell	Circulation	Structural	Observed
A. Krauze-Slomczynski Mobility Classification (Poland, 1972)			
C_{12}	27	0	27
C_{13}	2	0	2
C_{21}	29	69	98
C_{23}	32	0	32
C_{31}	0	68	68
C_{32}	34	142	176
Total	124	279	403
B. Switch 68 Structural Movers from C_{31} to C_{13}			
C_{12}	27	0	27
C_{13}	70	0	70
C_{21}	97	1	98
C_{23}	32	0	32
C_{31}	0	0	0
C_{32}	102	74	176
Total	328	75	403
C. Shift 30 Observations from Row 2 to Row 1			
C_{12}	38	0	38
C_{13}	3	0	3
C_{21}	41	43	84
C_{23}	30	0	30
C_{31}	0	63	63
C_{32}	33	146	179
Total	145	252	397

If the components of the Krauze-Slomczynski decomposition were marginally invariant, it would be possible to alter origin or destination distributions without changing the patterns of "circulation" mobility. We can show that their decomposition does not have this property by changing the relative frequencies in rows 1 and 2 of the Polish data. In panel C, we added 30 observations to the first marginal row sum of the table and subtracted 30 observations from the second marginal row sum of the table. Then, we adjusted row and column entries by iterative proportional scaling, preserving the original odds ratios and all other marginal sums. This is precisely the type of manipulation under which the interaction effects of loglinear and logmultiplicative models are invariant. However, in this case, the estimates of circulation mobility changed in all but one of the

mobility" of another nation, there is no reason to expect that these components would be recovered by the Krauze-Slomczynski decomposition of the synthetic table. Such counterfactual analyses present no difficulties under loglinear or logmultiplicative models.

⁵ Likewise, if one were to combine the "circulation mobility" of one nation with the "structural

off-diagonal cells whose row sums had been altered. It follows that the Krauze-Slomczynski decomposition is not invariant, and we conclude that it cannot be useful in comparative analysis.⁶

TESTING THE FJH HYPOTHESIS

The FJH hypothesis cannot be tested with the similarity measures applied by Slomczynski and Krauze (1987). In their original statement, Featherman, Jones, and Hauser (1975, p. 340) introduced the following hypothesis:

... the genotypical pattern of mobility (circulation mobility) in industrial societies with a market economy and a nuclear family system is basically the same. The phenotypical pattern of mobility (observed mobility) differs according to the rate of change in the occupational structure, exogenously determined . . . by . . . technological change, the supply and demand for specific kinds of labor . . . , and changing social values"

Nothing in this statement requires cross-national differences in "observed mobility" to be larger than cross-national differences in "circulation mobility." It simply says that observed mobility is affected by forces other than those determining the genotypical pattern of mobility. The net effect of these multiple forces is by no means clear, and in principle they could even offset one another and produce a "basic similarity" in observed mobility.

Previous tests of the FJH hypothesis have simply followed Featherman, Jones, and Hauser by comparing odds ratios (or functions of odds ratios). Grusky and Hauser (1984, p. 22) tested a variant of the Lipset-Zetterberg hypothesis by constraining observed relative frequencies to be cross-nationally constant, without conditioning on marginal frequencies. No one has previously suggested that the FJH hypothesis demands a comparison between cross-national differences in "circulation mobility" and "structural mobility," however measured. Slomczynski and Krauze (1987, p. 600) arbitrarily introduce an entirely new scheme for testing the FJH hypothesis: "In its original formulation, the FJH hypothesis calls for a comparison of the intercountry similarity of

observed-mobility patterns with the intercountry similarity of circulation-mobility patterns." We find no rationale for this test in the original formulation or in any subsequent tests of the FJH hypothesis, nor do Slomczynski and Krauze explain their innovation, beyond the claim just quoted.

The available empirical evidence does suggest that cross-national variations in observed mobility are larger than cross-national variations in odds ratios (e.g., Grusky and Hauser 1984). It is perhaps natural, therefore, to conflate the FJH hypothesis with the latter finding. Nonetheless, this conflation is logically incorrect, and the tests of the FJH hypothesis by Slomczynski and Krauze are thus logically unsound.⁷ Despite this initial error in logic, we shall review the tests conducted by Slomczynski and Krauze in detail. We find serious problems in their treatment of immobility, in their comparisons of inflow and outflow rates, and in their comparisons of odds ratios.

Reclassifying Immobiles

Slomczynski and Krauze (1987) provide no conceptual or theoretical justification for classifying frequencies on the main diagonal (immobility) as a component of circulation mobility, yet this decision has decisive effects on their empirical results. In the following reanalyses, we show that their treatment of the main diagonal is not only conceptually flawed but also makes it considerably easier for them to reject the FJH hypothesis.

The original Krauze-Slomczynski (1986a, p. 255) decomposition does distinguish between immobility and mobility. The complete mobility classification (N) is decomposed into entries on the diagonal (I) and off the diagonal (M), and the circulation mobility matrix (C) is defined as the residue of counts remaining after the matrix of structural mobility (S) is subtracted from the matrix of off-diagonal elements (M). Krauze and Slomczynski conclude (1986a, p. 255):

The equality $C = M - S$ formally defines circulation mobility. Interpretively, circulation mobility is the part of total mobility that consists of the maximal number of persons involved in

⁶ One counterexample is sufficient as mathematical disproof of the properties of autonomy and of invariance.

⁷ We thank Michael Sobel for bringing this to our attention.

status *transitions* [emphasis added] between identical origin and destination distributions.

They further claim to apply this same definition of circulation mobility in their 1987 paper (p. 601):

Following Krauze and Slomczynski (1986) we define circulation mobility as (1) the part of total mobility (2) consisting of interchange status transitions (3) which result in identical origin and destination distributions; it is (4) limited to interchange status transitions and exhausts them.

However, despite these prior statements, we are informed midway through their 1987 paper that respondents on the main diagonal will be reclassified as "circularly mobile" (p. 602). Why have they reversed their position? Why would anyone wish to treat immobiles as "circularly mobile?" And, most importantly, how does this decision affect their results?

It is easy to show that the Slomczynski-Krauze tests based on relative frequencies are seriously distorted by reclassifying respondents in this manner. Indeed, when two mobility tables have equal proportions in their corresponding off-diagonal cells, the Euclidean distance between the diagonal proportions in the circulation matrices will necessarily be larger than the Euclidean distance between the same entries in the original matrices. The discrepancies on the diagonal loom larger when the "structurally" mobile respondents have been removed, since the diagonal entries will make up a larger share of the total when off-diagonal counts are reduced. Consequently, the Euclidean distance is exaggerated, and the "FJH hypothesis" can be rejected more readily. In a private communication with us, Michael Hout has stated this simple conclusion more elegantly: "The identity $C = N - S$ guarantees that the denominator based on C will be less than the denominator based on N ."

The practical implications of this distortion are spelled out in lines 1 to 3 of Table 2. As shown in the first line of this table, we have repeated the Slomczynski-Krauze analyses of relative frequencies "proportions", using the standard 16-nation intergenerational classifications. The left-hand entry on this line reports the number of cases where the cross-table differences in circulation mobility are larger than the corresponding distances in observed mobility ("pairwise rejections"), and the two right-hand columns report the

Table 2. Pairwise Rejections and Squared Euclidean Distances for Proportions, Inflow Rates, and Outflow Rates in 16-Nation Sample

Measure	Pairwise Rejections	Squared Euclidean Distances Averaged Across 120 Tests	
		Observed	Circulation
1. Proportions	101	.0895	.1207
2. Off-diagonal proportions	15	.0134	.0046
3. Main diagonal proportions	115	.0761	.1160
4. SK simultaneous inflow-outflow test	65	—	—
5. Inflow rates	30	.1542	.0821
6. Outflow rates	43	.1340	.0868
7. Combined inflow and outflow rates	20	.2881	.1689

Note: The entry in column 1 is the number of times the FJH hypothesis (as interpreted by Slomczynski and Krauze) was rejected in 120 pairwise tests. The entries in columns 2 and 3 are the means of the squared Euclidean distances for the same 120 pairwise tests. See text for further details.

squared Euclidean distances averaged over the 120 pairwise comparisons among each set of tables.⁸ In lines 2 and 3, the entries on or off the main diagonal have been excluded, and the same set of pairwise comparisons have been carried out within the diagonal and

⁸ The intercountry distances between proportions are reported in Table 4 of Slomczynski and Krauze (1987, p. 606). They claim that the "FJH hypothesis" can be rejected in 105 out of 120 cross-national comparisons of distances between proportions (p. 605), but we find 101 rejections. We believe this discrepancy occurred because Slomczynski and Krauze rounded their findings to two significant digits, and we did not. Our efforts to reproduce this and other analyses were also hampered by their confusion about the source of the Japanese data used in their analyses. Although Slomczynski and Krauze state (p. 602) that their 16-nation data are those used by Grusky and Hauser (1983), their Table 2 (p. 603) reports a different set of Japanese data. The summary measures of mobility in Table 3 (p. 605) do agree with the data in Table 2, but we were only able to reproduce the findings in Table 4 (p. 606) and Table 5 (p. 607) with the version of the Japanese data reported by Grusky and Hauser. Slomczynski (private communication) has told us that his analyses were based on the revised Japanese data of his Table 2, but his own FORTRAN code (kindly supplied by him at our request) confirms that they were based on the Grusky-Hauser version of the Japanese data.

off-diagonal components of the classifications. It is possible, in this way, to decompose the distances for the full classification into a component produced by the entries on the main diagonal and a complementary component produced by the entries off the diagonal (i.e., $.0895 = .0134 + .0761$, and $.1207 = .0046 + .1160$).

The results in this table are striking. In both sets of occupational classifications, the entries on the main diagonal dominate those off the diagonal; compare lines 2 and 3. Moreover, in the off-diagonal comparisons, the "FJH hypothesis" is rejected only 15 times, and the average pairwise distance for the circulation data is 66 percent smaller than the average distance for the observed data; that is, in line 2, compare .0134 to .0046. If we renorm the proportions to add to 100 percent within the off-diagonal components of the mobility classifications, then the Slomczynski-Krauze version of the FJH hypothesis is still rejected in only 57 of 120 comparisons. It is clear that any conclusions about cross-national variations in "circulation mobility" will be affected decisively by the treatment of the main diagonal. In the Slomczynski-Krauze analyses of proportions, the pairwise distances between the circulation matrices are inflated by including the frequencies on the main diagonal, and consequently the "FJH hypothesis" can be rejected more readily.

It is notable that Slomczynski and Krauze reinvolve their distinction between mobility and circulation mobility at one point in the text. In the right-hand columns of Table 3, they report "circularly mobiles as proportion of total sample" and "nonsymmetric flows as proportion of the amount of circulation mobility." In these cases, the proportions "circularly mobile" do not include frequencies on the main diagonal, and they conclude that nonsymmetric flows are "large enough to warrant that nonsymmetric exchanges are an empirically important part of circulation mobility" (p. 605). The nonsymmetric flows would be minuscule proportions of "circulation mobility" under the more inclusive definition used elsewhere by Slomczynski and Krauze.

Outflow and Inflow Rates

The classification of immobile individuals as "circularly mobile" also affects the Slomczynski-Krauze tests comparing matrices of

outflow and inflow rates, but other problems of validity became evident when we attempted to replicate these tests. In their Table 1 (p. 601) and in equation 3 on p. 602, Slomczynski and Krauze set up a block-diagonal matrix of inflow and outflow rates and imply that their test is based on a calculation of Euclidean distances across all of the cells of this single matrix. However, on page 605, when Slomczynski and Krauze introduce the results from their calculations, they describe a completely different test. They state that the FJH hypothesis will be rejected unless "formula (2) is satisfied for both outflow rates and inflow rates" (p. 605). The latter text suggests that they actually carried out *separate* comparisons based on outflow rates and on inflow rates, and that they rejected the hypothesis whenever *either* test failed to satisfy the inequality expressed in equation 2. When we carry out the tests in this fashion, we reproduce the findings of Slomczynski and Krauze exactly (line 4, Table 2).⁹

This procedure strongly affects the interpretation of their results. If inflow and outflow tests were independent and random, we would still expect the joint testing procedure of Slomczynski and Krauze to reject the FJH hypothesis 75 percent of the time. In the present case, the FJH hypothesis is rejected in only 30 inflow tests (line 5) and in 43 outflow tests (line 6), yet the rejection rate can be increased to 65 by requiring that both tests simultaneously satisfy equation 2 (line 4). The 65 rejections with these data are fewer than the 90 rejections ($.75 \times 129 = 90$) one would expect to find if the test outcomes were independent and random. We also found only 20 rejections in tests based on the original, block-diagonal matrix of inflow and outflow

⁹ We can also reproduce the findings of Slomczynski and Krauze (p. 607) in the case of separate comparisons of outflow rates and of inflow rates within the 22-nation sample. That is, the "FJH hypothesis" was rejected in 29 percent of the comparisons using outflow rates and in 25 percent of the comparisons using inflow rates. Since these reported rates of rejection fall below those stated by Slomczynski and Krauze as a criterion for global rejection of the FJH hypothesis, we are puzzled by their failure to comment on this discrepant finding beyond their apparently inconsistent conclusion: "Generally, the results of the test for 22 countries are similar to those for 16 countries" (p. 607).

rates (Line 7).¹⁰ It follows that these measures provide no support for their conclusions.

Odds Ratios

In their final set of pairwise tests, Slomczynski and Krauze (1987, p. 601) use a complete set of odds ratios and "crossing odds" to carry out the comparisons. They find that the Euclidean distances among the "circulation" matrices are often larger than the corresponding distances among the observed data and conclude that the FJH hypothesis should be rejected. Once again, the findings are weakened, not only by their treatment of the main diagonal, but also by their use of a joint testing procedure. We also disagree with the way Slomczynski and Krauze interpret the odds ratios calculated from the observed 16-nation data. Although we and many other researchers regard the cross-national similarity in these odds ratios as direct evidence in favor of the FJH hypothesis, Slomczynski and Krauze interpret the same results as evidence against the hypothesis. Their interpretation is incorrect and invalidates their conclusions.

Modeling Origin-Destination Differences

Even though the Krauze-Slomczynski decomposition cannot be used to test the FJH hypothesis, their analyses do raise interesting questions about the structure of cross-national differences in occupational distributions and about the effects of exogenous variables on the shape of these distributions. Indeed, by modeling occupational distributions and origin-destination shifts, we can begin to understand why the classic Lipset-Zetterberg hypothesis of equal mobility rates can be wrong even when the FJH hypothesis is right.

It should be kept in mind that origin-destination differences in class or occupation distributions do not correspond directly to simple temporal changes in the structure of the labor force (Mukherjee 1954; Duncan 1966). These differences arise from interoccupational variations in the timing and quantity of fertility, as well as variations in the rate of entrances into

and exits from the labor market, and secular changes in occupation or class distributions. In fact, since so many factors affect differences between origin and destination distributions, it is by no means clear how to interpret them or to construct credible models predicting them. Conversely, given the demographic basis of the intergenerational mobility table, there is no reason to believe that equality of origin and destination distributions (or symmetry in the frequencies) in a mobility table corresponds to any sociologically interpretable state of equilibrium. Consequently, to the degree that changes in occupational structure have been brought into comparative mobility analysis (e.g., Hauser et al. 1975; Featherman and Hauser 1978), the models have focused on differences between the marginals of independent mobility classifications, not on differences between origins and destinations within these classifications.

It is possible, nonetheless, to bring origin-destination differences explicitly into descriptive analyses of mobility with the Sobel-Hout-Duncan (SHD) mobility model (1985, 1986). The SHD model includes parameters for association between origins and destinations, for the shape of origin distributions, and for shifts in destination distributions that apply equally to each origin category.¹¹ Because the SHD parameters can be specified in a loglinear (logmultiplicative) model, their proposal makes it possible to compare mobility classifications without the methodological defects of the Krauze-Slomczynski decomposition. We will show that, beyond the problems already noted, the Krauze-Slomczynski decomposition is incommensurable with the SHD model.

For the 3×3 table, the SHD model can be written in the following way:

$$E(X_{ij}) = \alpha_j \beta_i \beta_j \delta_{ij} \gamma_{ij} \quad [1]$$

where X_{ij} is the observed frequency in the ij^{th} cell of a 3×3 classification, $\alpha_3 = 1$, $\beta_i = \beta_j$ if $i = j$, $\delta_{ij} = \delta_{ji}$, $\delta_{ij} = \gamma_{ij} = 1$ if $i = j$, $\gamma_{ij} = \gamma$ when $[i,j] = [1,2], [2,3]$ or $[3,1]$, and $\gamma_{ij} = 1/\gamma$ when $[i,j] = [2,1], [3,2]$, or $[1,3]$.

¹⁰ This result conflicts with the report of 31 rejections ($120 - 89 = 31$) by Slomczynski and Krauze (p. 606), and we have been unable to locate the source of this discrepancy. We have confirmed our own finding independently using GLIM and Lotus 1-2-3.

¹¹ Hope (1981, 1982) has proposed a related class of models. However, the models differ in that Hope writes the marginals as the sum and difference of origin and destination effects, and he incorrectly proposes that marginal homogeneity be tested against simple independence (rather than quasi-symmetry).

This model says that expected frequencies are generated by three symmetric marginal effects (β_1 , β_2 , and β_3), two asymmetric marginal parameters (α_1 and α_2), three symmetric interaction terms (δ_{12} , δ_{13} , and δ_{23}), and a single asymmetric interaction effect (γ). The SHD parameterization therefore differs from conventional loglinear models by partitioning the standard set of marginal effects into symmetric and asymmetric components. If quasi-symmetry holds, then the patterns of "exchange mobility" are governed by the five symmetric terms, and the patterns of "structural mobility" are governed by the remaining asymmetric terms. Consequently, under this model, there are marginal effects both for "exchange" and "structural" change (see Sobel, Hout, and Duncan 1985 for additional details).

The problems with the Krauze-Slomczynski decomposition become apparent when the SHD model is applied to the three occupational classifications in Table 3. In the first panel of this table, we have reproduced the standardized counts for the 1972 Polish classification. The full set of multiplicative estimates for this classification are presented in the first column of Table 4, but for our purposes the coefficient for the asymmetric interaction effect is of most interest (i.e., in column 1, $\gamma = 1.09$). It follows from this coefficient that the counts in the [1,2], [2,3], and [3,1] cells are approximately 9 percent

Table 3. Frequencies for Observed and Hypothetical Occupational Cross-Classifications

Cross-Classification	(a)	(b)	(c)
1. Table A (1972 Polish cross-classification)			
(a) Nonmanual	67.000	27.000	2.000
(b) Manual	98.000	220.000	32.000
(c) Farm	68.000	176.000	310.000
2. Table B (Semipermeable effect removed)			
(a) Nonmanual	67.000	24.707	2.186
(b) Manual	107.094	220.000	29.283
(c) Farm	62.225	192.333	310.000
3. Table C (Strengthened symmetric marginal effect for manual stratum)			
(a) Nonmanual	67.000	54.000	2.000
(b) Manual	196.000	880.000	64.000
(c) Farm	68.000	352.000	310.000

Note: In each panel, the rows refer to occupational origins, and the columns refer to occupational destinations. The Polish table in panel 1 was taken from Krauze and Slomczynski (1986a, p. 258).

Table 4. SHD Multiplicative Model and Krauze-Slomczynski Linear Programming Estimates for Tables A, B, and C

Model	Table A	Table B	Table C
A. SHD multiplicative model			
α_1	28.47	28.47	28.47
α_2	6.57	6.57	6.57
β_1	1.53	1.53	1.53
β_2	5.79	5.79	11.57
β_3	17.61	17.61	17.61
δ_{12}	0.42	0.42	0.42
δ_{13}	0.08	0.08	0.08
δ_{23}	0.29	0.29	0.29
γ	1.09	1.00	1.09
B. Krauze-Slomczynski circulation matrix			
C_{12}	27.00	24.71	54.00
C_{13}	2.00	2.19	2.00
C_{21}	29.00	26.89	56.00
C_{23}	32.00	29.28	64.00
C_{31}	0.00	0.00	0.00
C_{32}	34.00	31.47	66.00
Circulation-mobility rate	0.124	0.113	0.121

Note: The circulation-mobility rate in Panel B is the sum of the six C_{ij} estimates divided by the total sample size. The estimates in Panel A are in multiplicative form. See text for more details.

larger than they would be under the model of quasi-symmetry. In the Krauze-Slomczynski decomposition of the same occupational classification, the frequencies of "circulation mobility" are also asymmetric, but the asymmetries appear in the opposite direction; that is, in panel B, $C_{12} < C_{21}$, $C_{23} < C_{32}$, and $C_{31} < C_{13}$. The counts in this matrix are distorted because the Krauze-Slomczynski decomposition cannot separate asymmetric marginal effects (α_1 and α_2) from an asymmetric interaction effect (γ). We believe that most researchers would want to distinguish between these two sources of asymmetry in their analyses of mobility classifications. Indeed, in the SHD model, the former type of asymmetry pertains to structural mobility, and the latter type corresponds to "unreciprocated" mobility.

The same problem can arise when the observed data are made "quasi-symmetric" by forcing the interaction effects to be symmetric about the main diagonal. In the second panel of Table 3, we have removed the "semipermeable effect" from the Polish classification by multiplying or dividing the off-diagonal counts by γ . For example, in panel 2, $X_{13} = 2.00 \times 1.09 = 2.18$. Thus, in this revised quasi-symmetric classification,

$\gamma = 1$ by construction (see Table 4).¹² However, even though we have forced the interaction effects in this matrix to be symmetric, the "circulation mobility" frequencies under the Krauze-Slomczynski decomposition are still asymmetric. Once again, the presence of asymmetric marginal effects has led to distorted results (relative to the SHD model) by producing corresponding asymmetries in the set of circulation counts. We believe that most researchers would prefer models or methods that generate symmetric circulation counts from quasi-symmetric frequencies.

In the third panel of Table 3, we have multiplied the second row and the second column in Table A by a factor of 2. Under this rescaling, only the symmetric parameter β_2 changes in the SHD model; that is, to use the terminology of Sobel, Hout, and Duncan (1985), the amount of "exchange mobility" has increased by virtue of a strengthened symmetric effect within the manual sector. However, in panel B, the corresponding Krauze-Slomczynski estimates cannot be interpreted so easily (column 3, Table 4). In this case, increases in circulation mobility have been registered in several of the off-diagonal cells in the second row and column, yet we could not have determined the sources of the increases without our knowledge of the initial manipulations. These changes in the "circulation" frequencies might have been generated by changes in the sizes of social classes, or by complex fluctuations in the flows between these classes. The classic distinction between marginal and interaction effects has been elegantly operationalized within the loglinear framework. Nonetheless, once the Krauze-Slomczynski decomposition is adopted, the distinction has to be dropped.

EXPLAINING MOBILITY

In the widely accepted approach to comparative analysis of occupational mobility classifications, researchers attempt to build structural models of odds and odds ratios. Although Krauze and Slomczynski (see 1986a, 1986b) reject such models as representations of mobility classifications, they subsequently

turn to unfortunately crude versions of them in attempting to explain variations in "circulation mobility" among nations (Slomczynski and Krauze 1987). There would appear to be a serious logical contradiction in this. If odds ratios are not appropriate to parse the structure of an observed mobility classification, why are they appropriate in the case of a "circulation mobility" classification? Slomczynski and Krauze offer no rationale for their use of rudimentary loglinear models at this stage of their analysis.

In motivating and interpreting their comparative analyses, Slomczynski and Krauze misrepresent Grusky and Hauser (1984) by suggesting that they "claim to have demonstrated invariance" (p. 610) and by dismissing their explanatory models of mobility and immobility parameters. The fact is that Grusky and Hauser (1984, pp. 30-35) found and explained systematic differences in mobility among nations:

While we have emphasized the fundamental similarity of mobility patterns, we do not deny that there are real national variations in social fluidity; the model of invariance can be rejected at any conventional level of statistical significance (Grusky and Hauser 1984, p. 30).

In the next five pages of tables and text, Grusky and Hauser describe and explain the sources of these cross-national variations. They summarize the results in their conclusion:

... we departed from earlier international comparisons by directly incorporating several explanatory variables within a mobility model and by estimating and comparing the effects of these variables on the parameters of social fluidity. Contrary to assumptions of convergence theories, the results suggest that differences in the structure of mobility are at least as much a consequence of political organization as of economic development. The findings also suggest that the effects of political and economic variables are more complex than commonly supposed, in the sense that they cannot be generalized across the several parameters of mobility (Grusky and Hauser 1984, p. 36).

This text leaves no room for misunderstanding. Slomczynski and Krauze are grossly inaccurate in using Grusky and Hauser (1984) as a straw man on the issue of invariance.

Even if the circulation mobility decomposition were valid, there would remain other serious defects in the cross-national comparisons offered by Slomczynski and Krauze. They not

¹² The new data are the predicted values under the assumption that the asymmetric effect is zero. This procedure for "purging effects" has been elegantly applied by Clogg (1978) in a different context.

only fail to construct an explicit multivariate model of the effects of their several independent variables, but they also base their comparisons on a set of poorly specified dependent variables. In their analyses with the 22-nation sample, Slomczynski and Krauze (1987, pp. 606-9) combine the frequencies of "circulation" mobility and immobility and then construct two dependent variables from each classification. The first dependent variable is the single odds ratio in the 2×2 table formed by collapsing the manual and farm categories, and the second dependent variable is the single odds ratio in the 2×2 table formed by collapsing the manual and nonmanual categories. It is clear that the authors could not have constructed these contrasts without including immobility as a component of "circulation" mobility. Otherwise, each of their collapsed tables would contain at least one zero cell on the diagonal, and all of their odds ratios would be zero or undefined.

Moreover, Slomczynski and Krauze have chosen substantively important contrasts, but they are not independent. It has long been understood that each contrast is partly confounded with the other (Goodman 1969, p. 15). The confounding distorts effects of exogenous variables on each of the mobility contrasts as well as estimates of the contrasts themselves in each mobility table. The correct procedure, if one is interested in these particular contrasts, is to fit the two of them simultaneously, along with the effects of each of the exogenous variables. In so doing, one can test the adequacy of these contrasts as a description of the mobility classification, as well as obtain estimates of the effects of the exogenous variables. This is the procedure introduced by Grusky and Hauser (1984, pp. 30-35), but with the addition of a third contrast for blue-collar immobility.¹³

A MODEL OF CROSS-NATIONAL VARIATION IN MOBILITY

We find no reason to carry out further analyses

¹³ The combination of contrasts for nonmanual immobility and farm immobility yields the model of "perfect blue-collar mobility," which was estimated, tested, and rejected by Grusky and Hauser (1984, pp. 23-25). Because we have been unable to obtain the original counts for the complete 22-nation sample, we have been unable to test this model with their data.

of the Slomczynski-Krauze "circulation mobility" matrices.¹⁴ We think it more useful to offer a multiplicative model that addresses the substantive problems posed by Slomczynski and Krauze. In our model, we permit a set of exogenous variables to affect the SHD parameters for origin categories, origin-destination shifts, and quasi-symmetric interactions (also, see Ultee and Luijkx 1986). This parameterization is related to a model recently introduced by Hout (1988a), but we depart from his formulation by using table-specific variables rather than cell-specific terms. In principle, we can estimate the model by the method of maximum likelihood; however, because the sample sizes for some of the original mobility tables were not made available to us, we cannot report the correct standard errors.

We begin with a simple, descriptive model that says cross-national variations in the mobility process are a function of economic development (I), social-democratic politics (D), and two binary variables indexing East European (R) and Asian (J) nations. In the appendix, the sources of these variables are identified, and their values are supplied for each country.¹⁵ The expected counts in our models are estimated under the following types of constraints:

$$\log \alpha_{jk} = a_{1j} + b_{1j}I_k + c_{1j}D_k + d_{1j}R_k + e_{1j}J_k \quad [2]$$

$$\log \beta_{ik} = a_{2i} + b_{2i}I_k + c_{2i}D_k + d_{2i}R_k + e_{2i}J_k \quad [3]$$

$$\log \delta_{ijk} = a_{3ij} + b_{3ij}I_k + c_{3ij}D_k + d_{3ij}R_k + e_{3ij}J_k \quad [4]$$

where i , j , and k index origin, destination,

¹⁴ We had hoped to confirm, test, and extend the Slomczynski-Krauze comparative mobility analysis. Although they gave us a copy of their 22 standardized mobility tables (each normed to a total of 1,000 cases), they refused to release a complete listing of the original sample sizes. They did provide us with the sample sizes for three of their new tables (Czechoslovakia, Poland, and Japan), but they insisted that we consult the original sources to recover the remaining sample sizes. Since their work is based partly on similar materials obtained from us, we are surprised by this lack of reciprocity.

¹⁵ We have chosen to use these variables in an illustrative analysis because Slomczynski and Krauze refused our request for a list of the variables they used.

Table 5. Sources of Cross-National Variability in Symmetric and Asymmetric Mobility

Model	L^2	d.f.	$L^2/\text{d.f.}$	L_A^2/L_I^2	L_A^2/L_T^2
A. Baseline models					
1. $\{A\} \{B\} \{S\} \{C\}$	5674	169	33.6	100.0	—
2. $\{AC\} \{BC\} \{SC\}$	47	22	2.1	0.8	—
3. $\{AC\} \{BC\} \{S\}$	324	85	3.8	5.7	—
B. Asymmetric mobility					
4. $\{A\} \{BC\} \{SC\}$	392	64	6.1	6.9	—
5. $\{AI\} \{AD\} \{AR\} \{AJ\} \{BC\} \{SC\}$	266	56	4.8	4.7	—
6. 5 vs. 4 (Explained variation)	126	8	15.8	2.2	36.5
7. 5 vs. 2 (Unexplained variation)	219	34	6.4	3.9	63.5
8. 4 vs. 2 (Total variation)	345	42	8.2	6.1	100.0
C. Symmetric mobility					
9. $\{AC\} \{B\} \{S\}$	1866	127	14.7	32.9	—
10. $\{AC\} \{BI\} \{BD\} \{BR\} \{BJ\} \{SI\} \{SD\} \{SR\} \{SJ\}$	663	107	6.2	11.7	—
11. 10 vs. 9 (Explained variation)	1203	20	60.2	21.2	66.1
12. 10 vs. 2 (Unexplained variation)	616	85	7.2	10.9	33.9
13. 9 vs. 2 (Total variation)	1819	105	17.3	32.1	100.0
D. Total mobility					
14. $\{C\} \{AI\} \{AD\} \{AR\} \{AJ\} \{BI\} \{BD\} \{BR\} \{BJ\} \{SI\} \{SD\} \{SR\} \{SJ\}$	1478	141	10.5	26.0	—
15. 14 vs. 1 (Explained variation)	4196	28	149.9	74.0	74.6
16. 14 vs. 2 (Unexplained variation)	1431	94	15.2	25.2	25.4
17. 1 vs. 2 (Total variation)	5627	147	38.3	99.2	100.0

Note: A = Asymmetric Marginal Effects, B = Symmetric Marginal Effects, S = Symmetric Association, C = Country, I = Economic Development, D = Social Democracy, R = Eastern Block, J = Asia. The denominator in the first L_A^2/L_I^2 ratio is the association under the model of independence (line A1), and the denominator in the second ratio is the variation in asymmetric (line B8), symmetric (line C13), or total (line D17) mobility.

and country. In this context, α_{jk} , β_{jk} , and δ_{ijk} refer to the SHD parameters defined in equation 1, and I_k , D_k , R_k , and J_k refer to the exogenous variables defined in the appendix. The subscripted coefficients a through e can be interpreted as the intercepts and slopes in the regression of the SHD parameters on the four exogenous variables. In our analysis, these constraints are embedded within the SHD model, and we obtain simultaneous maximum likelihood estimates of all of the parameters. This model could be extended by permitting an additional error term within each macro-level equation, but we will not do so in the present analysis (see, e.g., Mason, Wong, and Entwisle 1983; Judge, Griffiths, Hill, Lutkepohl, and Lee 1985, pp. 797–821).¹⁶

Table 5 reports the fit of several models within the framework of the SHD model and our extension of it.¹⁷ In line A1, the model

includes a main effect for each country (C) and a single set of marginal effects for all countries (A and B). In addition, the model fits a set of quasi-symmetric interaction terms (S), and it constrains these terms to be the same in each country. This model is clearly inconsistent with the data; however, in the following analyses, we use its fit statistic as a baseline to measure cross-national variation in the SHD parameters. In line A2, we again fit a quasi-symmetric model, but now we permit the full set of terms in the SHD parameterization (A, B, and S) to vary freely across the 22 countries. The fit statistic improves dramatically when the cross-national constraints on mobility are relaxed in this manner.

The models in panel B partition the variation in asymmetric marginal effects into explained and unexplained components. Model B4 forces the asymmetric effects to be the same in each country, and model B5 permits these effects to interact with the four exogenous variables. The latter model adopts the constraints expressed in equation 2, but it permits the remaining symmetric parameters to vary freely across the 22 nations. The contrast in line B6 shows that the four exogenous variables account for 36.5 percent of the association due to variation in asymmet-

¹⁶ We thank Adrian E. Raftery for suggesting this extension.

¹⁷ The results in this table pertain to the total frequencies rather than the Slomczynski-Krauze circulation frequencies. The fit statistics cannot be taken seriously because they are based on the standardized frequencies that Slomczynski and Krauze used.

ric marginal effects. The remaining unexplained variation is generated by other macro-level variables and by more proximate determinants of shifts in marginal distributions, such as class-specific fertility and mortality rates and the pace of secular occupational change.

The same procedures can be used to partition the variability in symmetric parameters into explained and unexplained components. In panel C of Table 5, model C9 constrains the symmetric effects to be the same in each country, and model C10 permits these effects to interact with the four exogenous variables. The symmetric terms in model C10 are forced to satisfy the constraints expressed in equations 3 and 4, and the remaining asymmetric terms are permitted to vary freely across the 22 nations. The contrasts in lines C11 through C13 show that the four exogenous variables can explain 66.1 percent of the association due to variability in the symmetric parameters, whereas the remaining 33.9 percent of the association is generated by variables omitted from the model.

The final panel in Table 5 partitions the total variability in the SHD model into explained and unexplained components. In line D14, we permit the exogenous variables to interact with asymmetric marginal effects (*A*), symmetric marginal effects (*B*), and parameters for symmetric association (*S*). This set of interaction effects forces the terms in the SHD model to satisfy the constraints expressed in equations 2, 3, and 4. If the test statistic for model D14 is contrasted with the test statistics for models A1 and A2, we can measure the explained and unexplained variation in the full set of symmetric and asymmetric terms. The contrasts in lines D15 through D17 indicate that the four exogenous variables can account for as much as 74.6 percent of the association due to cross-national variability in these terms.

In this set of illustrative analyses, we find systematic cross-national variability in both symmetric and asymmetric parameters of mobility. However, when we compare the contrasts in panels B and C, the total association due to variation in asymmetric marginal effects (line B8) is substantially smaller than the total association due to variation in symmetric effects (line C13). This result implies that cross-national variation in the effects of origin-to-destination

shifts are small in comparison to the combined effects of cross-national variations in origin distributions and relative mobility chances. If we were to apply the SHD terminology, we would conclude that country-by-country variation in "circulation mobility" dominates the complementary variation in "structural mobility." It should be emphasized, at the same time, that the FJH hypothesis does not refer to cross-national variations in the full set of symmetric effects under the SHD parameterization. The latter hypothesis only pertains to relative-mobility chances.¹⁸

Table 6 reports a series of contrasts specifying the independent effects of each of the four exogenous variables. These contrasts were obtained by backward selection from a baseline model that includes all possible interactions between the exogenous variables and the full set of symmetric and asymmetric terms (line A1, Table 6). In the following panels, this model has been modified by deleting some of the interactions, and the chi-square statistics for the trimmed models have been contrasted with the baseline statistic. The series of models in panel B, for example, were constructed by deleting the interactions between social democracy and the terms for symmetric or asymmetric mobility (lines B2 through B4); the corresponding contrasts are presented in lines B5 through B7. In panels C through E, the interaction terms for the remaining independent variables are deleted in similar fashion, and the modified models are once again contrasted with the baseline model.

The results from this table reveal that most of these variables cannot account for a large percentage of the variation in asymmetric mobility. In panel B, we see that cross-national variation in the strength of social democratic parties can only account for 2.9 percent of the total variation in asymmetric mobility, while the same variable accounts for as much as 7.9 percent of the total variation in symmetric mobility. This contrast between the symmetric and asymmetric statistics is less impressive in some of the other panels (e.g., panel C), but the general result underscores the need to construct more powerful theoretical explanations of the

¹⁸ The fit of the model of constant social fluidity is reported in line A3 of Table 5.

Table 6. Partitioning the Effects of Exogenous Variables on Symmetric and Asymmetric Mobility

Model	L^2	d.f.	$L^2/\text{d.f.}$	L_A^2/L_T^2
A. Baseline model				
1. {C} {AJ} {AD} {AR} {AJ} {BI} {BD} {BR} {BJ} {SI} {SD} {SR} {SJ}	1478	141	10.5	—
B. Social democracy				
2. Delete {AD}	1488	143	10.4	—
3. Delete {BD} {SD}	1621	146	11.1	—
4. Delete {AD} {BD} {SD}	1900	148	12.8	—
5. 2 vs. 1 (Asymmetric effects)	10	2	5.0	2.9
6. 3 vs. 1 (Symmetric effects)	143	5	28.6	7.9
7. 4 vs. 1 (Total effects)	422	7	60.3	7.5
C. Economic development				
8. Delete {AJ}	1515	143	10.6	—
9. Delete {BI} {SI}	1690	146	11.6	—
10. Delete {AJ} {BI} {SI}	2314	148	15.6	—
11. 8 vs. 1 (Asymmetric effects)	37	2	18.5	10.7
12. 9 vs. 1 (Symmetric effects)	212	5	42.4	11.7
13. 10 vs. 1 (Total effects)	836	7	119.4	14.9
D. Asia				
14. Delete {AJ}	1498	143	10.5	—
15. Delete {BI} {SI}	1590	146	10.9	—
16. Delete {AJ} {BI} {SI}	1792	148	12.1	—
17. 14 vs. 1 (Asymmetric effects)	20	2	10.0	5.8
18. 15 vs. 1 (Symmetric effects)	112	5	22.4	6.2
19. 16 vs. 1 (Total effects)	314	7	44.9	5.6
E. Eastern block				
20. Delete {AR}	1479	143	10.3	—
21. Delete {BR} {SR}	1608	146	11.0	—
22. Delete {AR} {BR} {SR}	1674	148	11.3	—
23. 20 vs. 1 (Asymmetric effects)	1	2	0.5	0.3
24. 21 vs. 1 (Symmetric effects)	130	5	26.0	7.1
25. 22 vs. 1 (Total effects)	196	7	28.0	3.5

Note: A = Asymmetric Marginal Effects, B = Symmetric Marginal Effects, S = Symmetric Association, C = Country, I = Economic Development, D = Social Democracy, R = Eastern Block, J = Asia. The denominator in the L_A^2/L_T^2 ratio for lines B5, C11, D17, and E23 is the cross-national variation in asymmetric mobility (Table 5, line B8); the denominator for lines B6, C12, D18, and E24 is the cross-national variation in symmetric mobility (Table 5, line C13); and the denominator for lines B7, C13, D19, and E25 is the cross national variation in total mobility (Table 5, line D17).

causes and sources of structurally induced mobility.

The contrasts in Table 6 also show that economic development can account for a larger percentage of the cross-national variation than any of the other variables. In panel C, economic differences explain as much as 14.9 percent of the total cross-national variation in occupational mobility, yet the corresponding statistics for the remaining variables range from 3.5 to 7.5 percent. However, even after these variations in economic development have been controlled, systematic cross-national differences remain in symmetric and asymmetric patterns of mobility. The latter result implies that the "logic of industrialism" has by no means eliminated cross-national variations in stratification systems. It appears that cultural, political, or economic histories of countries

can "live on" to produce distinctive patterns of occupational mobility and inheritance.

It is instructive to examine the estimated effects of the four exogenous variables. In Table 7, the entries in panel A are drawn from model B5 (Table 5), and the entries in panel B are drawn from model C10 (Table 5). If we turn to column 1 in panel A, we see that economic development increases mobility rates by upgrading and reshaping the occupational margins in a mobility classification (lines A1 and A2, column 1). Moreover, in panel B, we see that economic development also increases symmetric patterns of mobility, not only by enlarging the manual and nonmanual sectors (lines B3 and B4), but also by increasing the exchanges between these two sectors (line B5).

The estimates in column 2 make it clear that social-democratic policies can also be

Table 7. Effects of Selected Exogenous Variables on Symmetric and Asymmetric Mobility

Parameters	Economic Development	Social Democracy	Asia	Eastern Block
A. Asymmetric mobility				
1. α_1	.167	-.021	-.694	-.030
2. α_2	.089	-.064	-.250	-.037
B. Symmetric mobility				
3. β_1	.050	.160	.020	-.317
4. β_2	.113	.165	-.417	.002
5. δ_{12}	.050	.033	.158	.236
6. δ_{13}	-.022	.077	.561	.519
7. δ_{23}	.002	.036	.369	.442

Note: For convenience in presentation, the scale of the economic development variable has been divided by 1,000, and the scale of the social-democracy variable has been divided by 10. The estimates in panel A are from model B4 (Table 5), and the estimates in panel B are from model C9 (Table 5). See text for further details.

effective in reducing class-based inequalities in life chances (lines B5, B6, and B7). It appears, however, that the cost of these policies is slowdown in some types of occupational upgrading and a consequent reduction in structurally induced mobility (lines A1 and A2). The same type of trade-off is apparent in column 3. In this case, the two asymmetric effects are relatively weak within the three Asian countries in our sample (lines A1 and A2), whereas the interclass exchanges in these countries are relatively strong (lines B5, B6, and B7). It is commonly argued that Asian countries have hierarchical and status-based cultures; nonetheless, in comparison with other classifications and net of other variables, we see no evidence of any closure in their relative-mobility chances. Indeed, in the present data, the effects are in precisely the opposite direction.

The final set of estimates suggests that political policies can have substantial effects on patterns of social fluidity. In line B5, for example, we see that exchanges between manual and nonmanual sectors take place 27 percent more frequently in socialist countries than in their nonsocialist counterparts, i.e., $e^{.236} = 1.27$. However, in panel A, the corresponding interactions with the asymmetric terms are small (and negative). This set of results suggests that socialist programs have no strong implications for the rates and patterns of structurally induced occupational mobility, whereas they do reduce class-based inequalities in life-chances. It is precisely these types of nonuniform effects that are obscured by the Krauze-Slomczynski decomposition.

This illustrative model could be extended or elaborated in several ways. It might be useful, for example, to model the row-by-

column interactions more parsimoniously by fitting association parameters (e.g., Goodman 1979), crossings parameters (e.g., Goodman 1972), or any related effects that imply symmetric patterns of interaction.¹⁹ Indeed, if the cross-national variability in the row-by-column interactions could be summarized in a single parameter, it would be useful to proceed by modeling the sources or causes of this contrast alone (e.g., see Grusky and Hauser 1983; Yamaguchi 1987). In some data sets, the cross-table variability in asymmetric "shift effects" could also be summarized with single linear or nonlinear contrasts, and the macro-level variables could be forced to operate through these terms. The latter extension has been carried out elegantly by Ultee and Luijkx (1986; also, see Hope 1982; Yamaguchi 1987).

CONCLUSION

We find numerous shortcomings in the work of Slomczynski and Krauze (1987). They did not produce an "operationalization of the original FJH hypothesis" (p. 609), or even refer to its "original formulation" (p. 599). On the contrary, their representation of the structure and development of this hypothesis is inaccurate, and their proposed test of it is logically incorrect. Moreover, they have not given "precise meaning" to the concept of circulation mobility (p. 609), since their operational

¹⁹ It should be kept in mind, of course, that our estimates of the symmetric marginal terms are *not* invariant under these types of reparameterizations of the row-by-column interactions. The asymmetric terms are invariant under some circumstances (see Sobel, Hout, Duncan 1985).

measure fails to satisfy basic methodological requirements of comparative analysis, and their definition is not even maintained consistently within their own text. They have surely not carried out the first "direct test" of the Featherman-Jones-Hauser hypothesis, for the Krauze-Slomczynski mobility decomposition is unrelated to this hypothesis.

The central defect of Slomczynski and Krauze (1987) is their adoption of the Krauze-Slomczynski (1986a) matrix decomposition. This is compounded by their failure to profit from criticism of their earlier work by Sobel, Hout, and Duncan (1986), or even from the constructive portions of their response to their critics (Krauze and Slomczynski 1986b). The absence of a statistical model and, consequently, of a framework for inference severely limits the usefulness of their conceptual scheme. One might regard the work of Slomczynski and Krauze (1987) as an illustration of the defects in the decomposition to which Sobel, Hout, and Duncan took exception.

In our effort to understand what Slomczynski and Krauze have done, we

attempted to reproduce their analyses and findings. These reanalyses have been hampered by inconsistencies in their paper and by their unwillingness to provide us with some of their data. Nonetheless, we have located several questionable procedures and doubtful findings in their empirical work and have shown how these made it easier for them to reject the FJH hypothesis, as they construe it. Finally, even if one were to accept their concepts and measurements of "circulation" mobility, serious weaknesses would still remain in their efforts to measure and explain cross-national variation in it.

In the concluding section of our paper, we have offered a multiplicative model that, we think, addresses the substantive problems posed by Slomczynski and Krauze (1987). This model is based on the Sobel-Hout-Duncan parameterization of the mobility classification, but we have modified it by permitting exogenous variables to affect both symmetric and asymmetric parameters of mobility. We hope that this model will provide a useful template for more detailed and comprehensive cross-national comparisons of social mobility.

APPENDIX. Listing of the Exogenous Variables for 22 Nations

Country	Economic Development	Social Democracy	Eastern Block	Asia
1. Australia	4795	39.5	0	0
2. Austria	2630	46.1	0	0
3. Belgium	4727	34.9	0	0
4. Canada	7653	5.5	0	0
5. Czechoslovakia	5676	0.0	1	0
6. Denmark	4172	44.2	0	0
7. England and Wales	5151	45.7	0	0
8. Finland	2679	26.5	0	0
9. France	2951	11.6	0	0
10. Hungary	2812	0.0	1	0
11. Italy	1787	18.6	0	0
12. Japan	1783	35.7	0	1
13. New Zealand	2530	49.1	0	0
14. Norway	3588	49.3	0	0
15. Philippines	209	0.0	0	1
16. Poland	3504	0.0	1	0
17. Spain	1023	0.0	0	0
18. Sweden	4506	48.3	0	0
19. United States	9201	0.0	0	0
20. West Germany	4234	37.4	0	0
21. West Malaysia	357	8.2	0	1
22. Yugoslavia	1192	0.0	1	0

Note: The economic-development variable refers to per capita energy consumption in kilograms of coal in 1965 (Taylor and Hudson 1972, pp. 326-28), and the social-democracy variable refers to the proportion of seats in the national legislature held by socialist or "social democratic" parties averaged over the elections immediately preceding and following 1960 (Jackman 1975, pp. 216-18).

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A PARADIGMATIC CRISIS IN THE MULTIPLICATIVE MODELING OF MOBILITY TABLES: THE PROBLEM OF CIRCULATION MOBILITY AS AN ANOMALY*

AN INVITED COMMENT ON HAUSER AND GRUSKY (1988)

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Multiplicative modeling of mobility tables satisfies the essential definitional requirements of a paradigm in the sense of Kuhn (1962). As proponents of the paradigm, Hauser and Grusky (1988) criticize Słomczynski and Krauze's (1987) test of the FJH hypothesis, which concerns the invariance of circulation-mobility patterns and the variation of observed-mobility patterns in industrial nations. We argue that Hauser and Grusky examine whether Słomczynski and Krauze's interpretations and methods fulfill the restrictions of the paradigm rather than evaluate the validity of derivation of the FJH hypothesis' testable implication and its test. Using the paradigm-free criteria of logic and substantive scientific reasoning, we show that none of Hauser and Grusky's main objections can be sustained and therefore the FJH hypothesis remains falsified. Our thesis is that the problem of representing circulation mobility has created an anomaly within the multiplicative-modeling paradigm.

Słomczynski and Krauze (1987) presented a test of the following hypothesis: national patterns of observed mobility are less similar than national patterns of circulation mobility. We claimed that this hypothesis is implied by the Featherman-Jones-Hauser (1975) theoretical statement—known as the FJH hypothesis—and that it should be rejected on empirical grounds. Discussion about the FJH hypothesis is likely to continue because of its theoretical appeal and importance in cross-national analysis (cf. Erikson and Goldthorpe 1987).

Our comment focuses on the validity of Hauser and Grusky's (1988) extensive cri-

tique of Słomczynski and Krauze's (1987) work. The critics allege that Słomczynski and Krauze "misrepresent the content and history of the hypothesis," "arbitrarily introduce an entirely new scheme," "provide no conceptual or theoretical justification," commit "a serious logical contradiction," "are grossly inaccurate," show "confusion," and make an "inconsistent conclusion." More than 50 pejorative evaluations of Słomczynski and Krauze's paper are present in Hauser and Grusky's critique. To our knowledge, during the last two decades neither in the *ASR* nor in other leading sociological journals in the United States has there appeared a full-length article with an equal or larger number of derogatory comments directed against a single piece of work.

Why has this happened? We argue that Hauser and Grusky's emotional critique is an "ideological" defense of a paradigm that has been challenged by a new solution to a longstanding problem that cannot be incorporated into the paradigm. We apply the perspective of Kuhn (1962) to the body of work in multiplicative modeling of mobility tables and to the present dispute about the procedure for testing the FJH hypothesis. According to our thesis, circulation mobility, a central concept in the FJH hypothesis, is the core of an anomaly within the paradigm.

MULTIPLICATIVE MODELING OF MOBILITY TABLES AS A PARADIGM

In the last decade, multiplicative modeling, a well established statistical technique, has been the dominant mode for analyzing mobility tables. Within this mode, emphasis is placed on the construction of models explaining the frequencies of cells in these tables by means of parameters that express the effects of marginal distribution, internal associations, and other features of the table.

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Usually, a series of models is formulated and tested, contrasting the restrictions on parameters. Substantive interpretation of parameters, parsimony, and goodness of fit are the main criteria for evaluating models. The exemplars of the approach are Goodman (1969, 1979), Duncan (1979), and Hauser (1978). In recent years, the technique has spread to various countries creating a "critical mass" of researchers who form an invisible college in which the ideas are exchanged, modified, and reinforced. The institutionalization of a specialized language, notation, and manner of presenting results differentiates this group from other researchers concerned with social mobility.

These characteristics of the reigning approach, and the community that pursues it, exemplify Kuhn's (1962) conceptualization of paradigm as interpreted by Ritzer (1975, p. 7): "A paradigm . . . serves to define what should be studied, what questions should be asked, how they should be asked . . . [it] serves to differentiate one scientific community . . . from another. It subsumes, defines, and interrelates the exemplars theories, and methods that exist within it."¹ In the analysis of the development of paradigmatic science, anomaly is the key concept, defined as a problem that resists persistent efforts at its solution. We argue that the problem of circulation mobility has become an anomaly within the multiplicative-modeling paradigm. Our solution of this problem, obtained from outside the paradigm, exposes this anomaly.

According to Kuhn, when a new solution cannot be absorbed by the paradigm, discussion about legitimate problems, methods, and results becomes more confrontational, acrimonious, and heated than during the period of normal science. Hauser and Grusky's (1988) critique closely exemplifies Kuhn's observations on the dynamics of paradigmatic science.

THE PARADIGM AND THE FJH HYPOTHESIS

There is no doubt that the term *circulation mobility* explicitly appears in the original

formulation of the hypothesis (Featherman et al. 1975, p. 340). During the 1950s and the 1960s the concept of circulation mobility, also called exchange mobility, became crystallized. This kind of mobility was defined as a part of total (observed) mobility, consisting of exchanges of persons between occupational categories and involving identical origin and destination distributions. The amount of circulation mobility was measured either on the basis of the minimum of frequencies in the symmetric entries of the mobility table or by using the value of the index of dissimilarity. However, early researchers realized that both measures were deficient. The search for an adequate operationalization of the concept of circulation mobility was quite intense in the early 1970s (for review of the literature of that period, see Bibby 1975; Noble 1979).

Prior to 1975, when the FJH hypothesis was published, no concept of circulation mobility other than the one already described and now known as classical, has appeared in the literature. When Hauser and Grusky (1988) write about "definitions of 'circulation' and 'structural' mobility . . . adopted . . . in the initial statement of the FJH hypothesis," they can only be referring to the classical formulations.²

² In the original paper, the authors of the FJH hypothesis provided some results pertaining to the amounts of gross, structural, and circulation mobility computed on the basis of the index of dissimilarity (Featherman et al. 1975, Table 1). Referring to these results, Hauser and Grusky (1988) state that "under the traditional distinction between gross and net mobility, no decomposition of full set of mobility frequencies is either entailed or implied." This is not so, and the proof is simple:

Let $N = (n_{ij})$, $A = (a_{ij})$, $C = (c_{ij})$, $S = (s_{ij})$, and $E = (e_{ij})$ denote matrices of observed mobility, immobility, "circulation mobility," structural mobility, and the errors, respectively, where: $a_{ij} = n_{ij}$ for $i = j$ and 0 otherwise, $c_{ij} = \min(n_{i.} - a_{i.}, n_{.j} - a_{.j})$ for $i \neq j$ and 0 otherwise, $s_{ij} = (n_{i.} - a_{i.} - c_{i.})(n_{.j} - a_{.j} - c_{.j})/(n_{..} - a_{..} - c_{..})$ and $e_{ij} = n_{ij} - a_{ij} - c_{ij} - s_{ij}$. Then the decomposition is $N = A + C + S + E$ and $n_{..} = a_{..} + c_{..} + s_{..}$ since $e_{..} = 0$ necessarily. The traditional measure $c_{..} = n_{..} - a_{..} - s_{..}$, used by Featherman et al. (1975), is therefore implied by the decomposition of N . Krauze and Slomczynski (1986) demonstrated that such decompositions are inadequate. In consequence, the results for the Yasuda index computed by Featherman et al. (1975, Table 1) are also misleading (Naoui and Slomczynski 1986).

¹ Taking into account the scope of the research area, multiplicative modeling of mobility tables should be seen as a micro-paradigm rather than a full-scale paradigm. We use the less cumbersome term *paradigm*.

CONFUSION ABOUT THE MEANING OF CIRCULATION MOBILITY

Six years after the publication of the FJH hypothesis, Featherman (1981, p. 369) discussed to the problems of separating structural and circulation mobility: "Development of statistical analysis of . . . loglinear models to disaggregate mobility flows from effects of 'structure' in mobility tables . . . appears to have solved these problems." This quotation shows a typical and persistent confusion between mobility flows and interactions in the mobility table. Certainly, the control of the effects of origin and destination distributions does not result in circulation-mobility flows understood as exchanges of persons between occupational categories.

When the FJH hypothesis was published, the confusion of circulation-mobility flows and interactions had no serious consequences for the emerging paradigm. After Sobel's (1983) article, it became apparent that there are serious difficulties with including the concept of circulation mobility in the paradigm. In effect, all proponents of the paradigm, with Hauser and Grusky being no exception, tend to eliminate the term *circulation mobility* from their presentation of the hypothesis. This, however, does not solve the problem of how to represent this kind of mobility and incorporate the results into the testing scheme.

A PARADIGMATIC CRITIQUE OF THE NEW TEST AND A REFUTATION OF THE OBJECTIONS

Hauser and Grusky (1988) dispute Slomczynski and Krauze's interpretation of the FJH hypothesis as requiring a comparison of inter-country similarity of observed-mobility patterns and circulation-mobility patterns. The critics use two arguments. First, they invoke the intentions of the authors of the FJH hypothesis and refer to the research practice of subsequent tests. The second argument is based on the observation that the "available empirical evidence does suggest that cross-national variations on observed mobility are larger than cross-national variations in odds ratios." The structure of the argument is as follows: (1) "It is perhaps natural . . . to conflate the FJH hypothesis with [this] . . . finding"; (2) if it is perhaps natural to do so, Slomczynski and Krauze are

unlikely to escape this tendency; (3) since "this conflation is logically incorrect," Slomczynski and Krauze made an "initial error in logic." However, what is natural for Hauser and Grusky is perhaps not natural for Slomczynski and Krauze. Hauser and Grusky's inference on the basis of unfounded assumption is an example of faulty reasoning known as the *petitio principii*. This discussed imputation of an error in logic is in itself logically incorrect.³

Logical Reconstruction of the FJH Hypothesis

In Slomczynski and Krauze's (1987) paper, both the derivation of a testable implication of the FJH hypothesis and its operationalization are justified. We provide here a more detailed logical analysis of the hypothesis, using as a starting point the formulation of its content as quoted in Hauser and Grusky (1988):

the genotypical pattern of mobility (circulation mobility) in industrial societies with market economy and a nuclear family system is basically the same. The phenotypical pattern of mobility (observed mobility) differs according to the rate of change in the occupational structure, exogeneously determined . . . by . . . technological change, the supply and demand for specific kinds of labor . . . , and changing social values . . . [Featherman et al., 1975, p. 340].

In the first sentence, the phrase "a market economy and a nuclear family system" restricts the scope of the hypothesis to a subset of all industrial societies. In the second sentence, "the rate of change in the occupational structure," determined by various forces, differentiates societies. Since there is a single FJH hypothesis, its two constitutive sentences must be considered jointly. Therefore, the hypothesis implies the following statement: In a subset of industrial societies, the genotypical pattern of mobility is basically the same *and* the phenotypical pattern of mobility differs.

Let G be the property called the genotypical pattern of mobility. The hypothesis says that G is "the same." This means that there is no variation among $G(i)$ where $G(i)$ denotes G

³ This sentence is a paraphrase of a statement by Jones (1985b, p. 442) about Sobel. We note that Sobel supplied this incorrect argument to Hauser and Grusky (1988; see note 7 of their paper).

for the i th country ($i = 1, \dots, n$). In contrast, the phenotypical pattern P "differs." That is, there is some variation among $P(i)$, where $P(i)$ denotes P for the i th country. Denoting the variation in G by $V_1(G)$ and the variation in P by $V_2(P)$, the testable implication of the FJH hypothesis is

$$V_1(G) = 0 \text{ and } V_2(P) > 0. \quad (1)$$

In the test, the extent of variation in G and P must be assessed on the same basis. Otherwise, the result of the test of the hypothesis would be undetermined since: (1) a measure of variation multiplied by a positive constant is also a measure of variation; and (2) by manipulating these constants for the two measures, one could assure acceptance of the hypothesis. Therefore $V_1 = V_2 = V$, which results in

$$V(G) < V(P). \quad (2)$$

The specification of the measure of variation as a distance function captures the dissimilarity between the compared patterns. Therefore, the inequality

$$\text{dist}[G(i) < G(j)] < \text{dist}[P(i), P(j)] \quad (3)$$

holds on the basis of (2). Clearly, inequality (3) is a generalization of inequalities (1), (2), and (3) in Slomczynski and Krauze's (1987, p. 602) paper.

As long as no error is identified in this logical analysis of the FJH hypothesis, Hauser and Grusky's argument that Slomczynski and Krauze "misrepresent the content . . . of the hypothesis" and "arbitrarily introduce an entirely new scheme of testing the FJH hypothesis" is unfounded. In science, logical analysis must be given priority over historical precedents or declarations of intentions. Hauser and Grusky neither offer this kind of analysis nor do they consider the possibility that the first test of the hypothesis was indirect, incomplete, and incorrect.

Minimal Methodological Requirements

Hauser and Grusky express the firm opinion that only autonomous and invariant measures satisfy the minimal methodological requirements of legitimate comparisons of mobility tables. However, these requirements may refer to parameters of interactions but not to

various important descriptive characteristics of mobility, such as entropy measures (Theil 1972), Bartholomew's index (Bartholomew 1973, p. 24), canonical composites (Sawinski and Domanski 1987), and many others.

Calculations made for the Polish table lead Hauser and Grusky to the conclusion that the frequencies of circulation mobility are neither autonomous nor invariant. Of course, no frequencies can have these properties, yet it is perfectly legitimate to compare mobility frequencies among countries or across time. An example of such comparison, pertaining to downward mobility, can be found in Featherman and Hauser's (1978, p. 92) book.

Disparities in Results

(1) Contrary to Hauser and Grusky (1988), the same notion of circulation mobility is used in both our papers: Krauze and Slomczynski (1986) and Slomczynski and Krauze (1987). In the first case, the algorithm is applied to mobiles only, whereas, in the second case, to both mobiles and immobiles. The reason for this extension is simple: the FJH hypothesis does not suggest that it is restricted to mobiles. However, according to the computations of Hauser and Grusky (1988): "If we renorm the proportions to add to 100 percent within the off-diagonal components . . . the FJH hypothesis is still rejected in only 57 out of 120 comparisons." Indeed, such normalization is necessary for legitimate comparisons of distances and the FJH hypothesis is still rejected.

(2) For the block-diagonal matrix of inflows and outflows, Slomczynski and Krauze report 31 pairwise rejections, but Hauser and Grusky find only 20 and state that they were "unable to locate the source of this discrepancy" (note 10).⁴ Still, the critics' report about the computational disparities in 11 cases should not obscure the unchallenged statistical result (for averaged distances over

⁴ Before Hauser and Grusky submitted their paper to ASR, we provided them with a Fortran program and an output of all results for each pair of countries. Even with a hand calculator, they should have been able to locate pairs of countries for which the numerical discrepancy occurs. Moreover, they provide results in high precision but do not note that some samples include less than 1,000 cases. We advised them to consult original sources for examining the sample sizes.

matrix cells) leading to a rejection of the FJH hypothesis in more than 40 percent of cases.

(3) Hauser and Grusky write that similarity in odds ratios is treated by many researchers as a direct evidence in favor of the FJH hypothesis. They do not mention that none of these researchers examined the odds ratios of circulation-mobility frequencies. Since the FJH hypothesis in its original formulation calls for a comparison of patterns of observed and circulation mobility, the critique of Hauser and Grusky is incomplete.

CIRCULATION MOBILITY AS AN ANOMALY WITHIN THE PARADIGM

The concept of circulation mobility was inspired by the insights of Pareto (1916) and Sorokin (1927). Its usefulness consists of the incorporation of the idea that a large part of mobility occurs due to the exchanges of persons within the time-invariant structure of social positions. The problem is to find a representation of circulation mobility that extracts these exchanges from all transitions in the mobility table. The multiplicative-modeling paradigm inherited this problem from previous investigators.

Attempts to Represent Circulation Mobility

In the early 1980s it became apparent that Hope's (1981) models were not capable of representing frequencies of circulation mobility. Sobel (1983:721-27) repeatedly called for "abandoning the framework of structural vs. circulation mobility." Some responses were made to various nonsequiturs in his argument (e.g., Slomczynski and Krauze 1984; Jones 1985a). Soon after, Sobel reversed his position about "abandoning" the framework and produced a model that included parameters explicitly related to circulation (exchange) mobility (Sobel, Hout, and Duncan 1985). However, this model (the SHD model) was based on a definition of circulation mobility understood as symmetric exchanges in the mobility table. Ironically, the authors of this model referred to Hutchinson (1958) but glossed over his profound observation about "the necessity of allowing for multilateral, compensating movements" (p. 115).

Hauser and Grusky (1988) applied and extended the SHD model. Neither of these models is able to represent *all forms of exchanges* of persons between origin and

destination categories. The rearrangement of the parameters of these models does not solve the problem, since the relationships between nonsymmetric exchanges are unreasonably constrained.

Odds Ratios as Circulation-Mobility Patterns

One should consider the possibility that circulation mobility is a latent construct for which exchanges are unknown while their pattern is available. This possibility is consistent with Hauser and Grusky's interpretation of the FJH hypothesis. After quoting the hypothesis, they write, "The referent of 'the pattern of circulation mobility' here is self-evidently the odds ratios." Unfortunately, this interpretation is not tenable.

Consider two mobility tables having the same odds ratios, one with equal margins and another with unequal margins. Clearly, the first table contains only exchanges, whereas the second table includes some mobility other than due to exchanges. The same set of odds ratios does not distinguish between these tables, and therefore it is not specifically related to circulation mobility. For this reason it is unclear why, for Hauser and Grusky, the odds ratios are "self-evidently" the referent of circulation mobility rather than simply of observed mobility.

Exchanges of Persons

Slomczynski and Krauze (1987, p. 599) wrote: "The fundamental question is *what constitutes circulation mobility*, understood as '*exchanges between occupations*'." We advocate a broad interpretation of exchanges consistent with usage of this term in sociology, anthropology, and economics. Is the multiplicative modeling of mobility tables capable of identifying or representing these exchanges? An answer to this question should take into account the following points.

First, if circulation mobility is to be represented by the parameters of any model, it must be defined and operationalized independently of that model. Sobel et al. (1985) were aware of this requirement and operationalized circulation mobility as the minimum of frequencies in the symmetric cells of the mobility table. Unfortunately, this operationalization is too narrow for the notion of "circulation" since it does not include all

forms of exchanges. Theoretically, marginal homogeneity may be based on nonsymmetric exchanges only.

Second, Krauze and Slomczynski's (1986) operationalization corresponds to the classical notion of circulation mobility, and their decomposition could be used for the purpose of modeling. But there is a paradox. On the one hand, the multiplicative modeling of circulation mobility, based on circulation-mobility frequencies, would require an acceptance of the linear-programming decomposition. On the other hand, if this decomposition is accepted, then it would become apparent that current multiplicative models of observed mobility cannot provide adequate representation of exchanges that this decomposition identifies.

Although this entire dispute about the FJH hypothesis rests on appropriate operationalization of circulation mobility, Hauser and Grusky ignore the query about the exchanges between occupational categories. Our query was motivated by their frequent usage of the term *exchange mobility* in an earlier paper (Grusky and Hauser 1984). What is exchange mobility and how can its frequencies be found? The absence of satisfactory answers to these questions again indicates that the problem of representing circulation mobility is an anomaly within the paradigm.

CONCLUSION

The test of the FJH hypothesis within the multiplicative-modeling paradigm lacked an adequate representation of circulation mobility understood as exchanges of persons among occupational categories. The new test (Slomczynski and Krauze 1987), based on such a representation, compares intercountry similarity in circulation-mobility patterns with intercountry similarity in observed-mobility patterns. Hauser and Grusky criticized the methods and procedures of the new test. However, since we have shown that none of their main objections can be sustained, the FJH hypothesis remains falsified.

Using Kuhn's perspective, we formulate the thesis that the problem of representing circulation mobility is an anomaly in the multiplicative-modeling paradigm. Unsuccessful past attempts to solve this problem support our thesis. In science, an anomaly is a symptom of paradigmatic crisis. According to Kuhn (1970, p. 76), "The significance of

crises is the indication they provide that an occasion for retooling has arrived." We believe that the multiplicative-modeling paradigm facing a crisis should coexist with and attempt to incorporate other approaches to the analysis of mobility tables, such as input-output analysis, linear programming, and information theory.

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ERRORS IN SLOMCZYNSKI AND KRAUZE'S COMPARATIVE ANALYSIS OF SOCIAL MOBILITY*

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If we were in Slomczynski and Krauze's position, we too might be tempted to change the subject to a discussion of the sociology of science. But we are not they, and we shall not do so. We are gratified that Slomczynski and Krauze have at least counted our criticisms of their paper; we wish they had responded to more of them. The issue is not how many criticisms we offered, but whether they are correct. In our opinion, the criticisms we have made of their work are a function of its scholarly and scientific quality, and many of them have nothing to do with the merits of their matrix decomposition.

We stand by our representation of Slomczynski and Krauze's (1987) work, by our reanalyses of it, and by our extensions of the Sobel-Hout-Duncan (1985) model. We continue to invite Slomczynski and Krauze to make a listing of all of their data available to other scholars, and we continue to encourage an open debate about the merits of their proposal.¹ It is notable that their present response remains silent on some of our strongest comments and criticisms. The authors are unable to explain why some of

their reported results cannot be replicated (Hauser and Grusky 1988); they offer no defense for their use of odds ratios to measure cross-national variations in observed mobility (Hauser and Grusky 1988); they provide no justification for their joint testing procedures (Hauser and Grusky 1988); and they offer no rationale for resorting to rudimentary loglinear models in their analyses of "circulation mobility" (Hauser and Grusky 1988).

However, Slomczynski and Krauze do comment on some specific points in our work, and we think it appropriate to respond to those comments. In their section titled "Disparities in Results," they admit to shifting their operational definition of "circulation mobility," yet they attempt to minimize the importance of this redefinition. We demonstrated that, without this redefinition, the outcomes of their empirical tests are dominated by the treatment of diagonal entries.² With the redefinition, they are no longer analyzing "circulation mobility," as they earlier defined and attempted to justify the concept. Indeed, under their original definition of "circulation mobility," the odds ratios used in their correlation analysis would equal zero or be undefined.

Slomczynski and Krauze attempt to justify the violations of marginal invariance and autonomy in their scheme by reference to other measures that also lack those properties. They are right that many other measures of mobility are not invariant and autonomous. These types of measures are legitimately used when researchers do not wish to control for the size and shape of class or occupational structures. However, in any measure purporting to represent circulation mobility, it is essential to control for the forces of occupational supply and demand. The measures proposed by Slomczynski and Krauze, as well as the earlier ones they cite, do not solve this key problem in comparative mobility analy-

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¹ We want to clarify the situation with regard to data-sharing. As we stated in our paper, Slomczynski and Krauze did give us a listing of percentages in each category of their 22-nation mobility data. We thanked them for that. With minor exceptions, they referred us to source publications for the original counts, and for a listing of their independent variables. This was not satisfactory. We did not think a claim of comparability could be justified unless we produced the findings in their correlation analysis, and this effort turned into a guessing game without their listing of the data. We were unable to reproduce their correlation analysis using the information Slomczynski and Krauze provided about the sources of their independent variables.

² We also documented other defects in the empirical testing procedures of Slomczynski and Krauze on which they did not comment.

sis. Thus, none of these measures should be used to compare relative mobility chances between classifications whose marginal distributions are different.

It is also useful to consider their "logical reconstruction" of the Featherman-Jones-Hauser hypothesis in some detail, since it shows that Slomczynski and Krauze have not carried out a "direct test" of the hypothesis, even within their own framework. Their equations (1) state a direct, testable implication of the FJH hypothesis as they construe it; we will refer to this as the strong form of their hypothesis. It says that circulation mobility is the same in every country. Their inequality (2) states an implication of (1), namely, that circulation mobility varies less than observed mobility; we will refer to this as the weak form of their hypothesis. It is the one they actually purport to test. Inequality (2) is implied by equations (1), but (2) does not imply (1). If (2) is rejected, then (1) cannot be true, but if (2) is not rejected, (1) may or may not be true. Does condition (2) provide a "direct test" of condition (1)? Of course not. Is (2) logically flawed as a test of (1)? Of course.

Contrast the logic of this supposedly direct-test procedure with that of previous tests of the FJH hypothesis as we and others have construed it: The null hypothesis is that countries are similar; the alternative is that they are not. We think that test is direct, though it is not a test of the hypothesis that Slomczynski and Krauze attempt to substitute for that of Featherman, Jones, and Hauser. Of course, the fact is that we and others have found cross-national variation in mobility regimes, net of marginal effects, and we are increasingly able to specify the parameters of that variation. Thus, the FJH hypothesis is now commonly understood as a useful foil against which to test our understanding of cross-national variations in patterns of circulation mobility, rather than an unconditional claim.

In this context, it is useful to consider the logic of the weak form of the Slomczynski-Krauze hypothesis in more detail.³ In the

Slomczynski-Krauze framework, y = "observed mobility" is completely determined by x_1 = "circulation mobility" and x_2 = "structural mobility" for a set of countries. Suppose further that y , x_1 , and x_2 are all in the same metric, so

$$y = x_1 + x_2. \quad (1)$$

That is, we have a linear decomposition where the structural coefficients of x_1 and x_2 are each unity. We may then think of the quantities, $\text{Var}(y)$, $\text{Var}(x_1)$, and $\text{Var}(x_2)$ as expressing the similarities of countries with respect to "observed mobility," "circulation mobility," and "structural mobility." The strong form of the hypothesis, corresponding to Slomczynski and Krauze's expression (1), is just $\text{Var}(x_1) = 0$. The weak form of the Slomczynski-Krauze argument is that, if the Featherman-Jones-Hauser hypothesis is wrong, and differences among countries in y are explained primarily by x_1 , it is necessarily the case that

$$\text{Var}(y) < \text{Var}(x_1). \quad (2)$$

This corresponds to a violation of Slomczynski and Krauze's inequality (2), and it is incorrect.⁴ It is elementary that equation 1 implies

$$\begin{aligned} \text{Var}(y) = \text{Var}(x_1) + \text{Var}(x_2) \\ + 2\text{Cov}(x_1, x_2). \end{aligned} \quad (3)$$

Since $\text{Cov}(x_1, x_2)$ may be positive or negative, there is no necessary relationship between the sizes of $\text{Var}(x_1)$ or $\text{Var}(x_2)$ and the size of $\text{Var}(y)$. Thus, we can easily imagine a situation in which $\text{Var}(x_2) > \text{Var}(x_1) > \text{Var}(y)$. In this case, Slomczynski and Krauze's procedure would lead us to reject the FJH hypothesis, even though structural mobility is the dominant source of variance in observed mobility. Obversely, we can also imagine a situation in which $\text{Var}(y) > \text{Var}(x_1) > \text{Var}(x_2)$. In this case, Slomczynski and Krauze's procedure would not lead us to reject the FJH hypothesis when it is false.⁵

³ Slomczynski and Krauze's exposition of their test procedure is complicated by its specification in terms of a part (genotypic or circulation mobility) and a whole (phenotypic or observed) mobility, rather than in terms of the components: circulation and structural mobility.

⁴ Krauze and Slomczynski (1986) developed this decomposition, but Slomczynski and Krauze (1987) did not undertake this test of their hypothesis in either its strong or weak form.

⁵ Throughout this discussion, we refer to the original definition of circulation mobility by Krauze and Slomczynski (1986), where it excludes

There are several misstatements of fact and misrepresentations of scholarly work in the Slomczynski-Krauze comment. They state, for example, that loglinear models "express the effects of marginal distributions, internal associations and other features of the table," but in fact there are no "other features" that these models could possibly represent (Plackett 1974, pp. 30-32). They also incorrectly claim that Sobel, Hout, and Duncan (1985) "operationalized circulation mobility as the minimum of frequencies in the symmetric cells of the mobility table." This statement simply makes no sense as a description of the Sobel-Hout-Duncan model.

We address one misrepresentation in more detail. Commenting on our statement that "The referent of 'the pattern of circulation mobility' . . . is self-evidently the odds-ratios" [*sic*], Slomczynski and Krauze elide the word "here" in our sentence, along with the following clause, and treat the statement as if it were a methodological claim. It is not (Hauser and Grusky 1988, p. 5). The quoted statement refers not to odds ratios, but to the misconstruction by Slomczynski and Krauze of a passage in Featherman, Jones, and Hauser (1975). Although we believe that the pattern of circulation mobility is often well represented by odds-ratios, that is far from self-evident. It took roughly 20 years before Goodman solved the methodological problem posed by the nearly simultaneous rediscovery of the social distance-mobility ratio by Rogoff, Glass, and Carlsson.

The concept of circulation mobility is not an anomaly within the loglinear modeling framework that has spawned the Featherman-Jones-Hauser hypothesis, the Sobel-Hout-Duncan model, and a great deal of other productive research. To the contrary, as specified operationally in terms of row-by-column association, the concept has been central in most of the mobility research of the past two decades. What separates this use of the concept of circulation mobility from that preferred by Slomczynski and Krauze is the fact that it does not refer to a specific set of

frequencies. Most researchers abandoned this notion years ago when it became clear that it was not useful, and they turned instead to specifications of circulation mobility, structural mobility, and other concepts in terms of parameters of mobility models and the properties of those parameters. There is no more reason to insist that "circulation mobility" have a frequency interpretation than that operationally parallel concepts like "classification error" or "assortative mating" have a frequency interpretation. Although Slomczynski and Krauze claim that the decision to abandon a frequency interpretation is a "scientific anomaly," this decision is precisely what has led to the scientific advances of the past 20 years.

In closing, we note that we have adopted a variety of methodological stances in the past (see, e.g., Hauser, Tsai, and Sewell 1983; Hauser and Mossel 1985), and no doubt we shall continue to do so in the future. But it would be as senseless to accept a new procedure, merely to avoid charges of methodological intolerance, as it would be to reject it merely because it is new. The methods favored by Slomczynski and Krauze are incommensurable with methods based on loglinear models. This in itself is insufficient reason to recommend or reject them; methods have to be considered on their merits. The Slomczynski-Krauze matrix decomposition fails this test for many reasons (Sobel, Hout, and Duncan 1986), not least among which is its uselessness in comparative analysis. Slomczynski and Krauze cannot convert methodological defects into virtues by recasting them in terms of paradigmatic conflict.

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immobility. If we combine circulation mobility with immobility, as Slomczynski and Krauze (1987) sometimes do, then by construction the sum of "circulation mobility" and "structural mobility" will always be one, so y will have no variance, and the variances of "circulation mobility" and "structural mobility" will always be equal.

FORMAL EDUCATION AND INITIAL EMPLOYMENT: UNRAVELLING THE RELATIONSHIPS BETWEEN SCHOOLING AND SKILLS OVER TIME*

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This research examines skill changes in the occupational structure of entry-level jobs in Canada, circa 1930–80, along with the changing importance of years of formal education as a criterion for occupational allocation. For both men and women, entry-level jobs with high cognitive complexity and verbal-activity requirements appear to have become more common, and those with high gross-motor activity requirements less common. Throughout the period, formal education was an important factor for entry into certain kinds of occupations. Finally, the importance of schooling for occupational access seems to have become more important in recent times.

In Canada, as in the Western industrialized countries generally, more people have been staying in school longer (Leacy 1983, p. W80; Robb and Spencer 1976, p. 56; Canada 1983). Along with the expansion of the educational system, the nature of paid work in Canada has been continuously transformed (Ostry 1967; Rinehart 1975; Hunter 1986). This paper explores certain aspects of the connection between schooling and work over the middle half of the 20th century. In particular, it addresses the question of how level of formal education has been related to the skill or other task requirements of people's first jobs, under conditions where people have become better educated for a constantly changing occupational structure.

THEORY AND BACKGROUND

The social sciences present a continuum of contending conceptions of how formal education relates to paid work in capitalist economies. At one end, neoclassical economists, structural-functionalists, and post-industrial-society theorists subscribe to a technical-functional view. In the strong ver-

sion (e.g., Kerr, Dunlop, Harbison, and Myers 1960; Clark 1962; Bell 1973; also see Davis and Moore 1945; Becker 1964; Porter 1985), schooling is the major means by which individuals acquire the mental skills and capacities for self-direction necessary for successful future performance in an occupation. In the weak one (e.g., Thurow 1972, 1975), formal education is a signal of individuals' abilities to learn on the job and, hence, of training costs. In general, both the strong and the weak versions assume that it is important to employers to match the more highly trained or readily trainable people with the more demanding jobs.

At the other end is the strict credentialist conception, which has both Marxist and Weberian proponents, in which schooling is regarded as primarily a means of shaping and certifying people's values, attitudes, and habits, and only secondarily, at most, as a mechanism for imparting skills as such or as an indicator of technical trainability. Whether Weberian (e.g., Collins 1971, 1979; also see Parkin 1979) or Marxist (e.g., Bowles and Gintis 1976; Rinehart 1975), *strict* credentialists argue that most people are capable of moving into and meeting the technical demands of most occupations (Bowles and Gintis 1976, p. 114; also see Hall and Carlton 1977), so that it is rarely crucial for employers to match the skill qualifications of job applicants with the skill requirements of vacant jobs. At the same time, educational credentials are convenient markers for employers of the suitability of potential employees

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for jobs at different levels of autonomy, responsibility, or self-direction.¹

The development of industrial capitalism in Canada has transformed the largely rural, agrarian, self-employed commodity producers and craftspeople of the mid-19th century into the primarily urban, commercial-industrial-service employees of the late 20th century (Heron and Storey 1986; Rinehart 1975; Hall 1973). Increasingly, work has become specialized and rationalized with the application of scientific management techniques and brought under bureaucratic control in hierarchically organized internal labor markets. Also, human energy in the workplace has been superseded by nonhuman sources of power, manually directed tools by mechanical devices and, later, automated equipment. What, then, have developments in managerial and industrial technique meant for the distribution of skill and other task requirements in the occupational structure and the connection between schooling and work?

From the neoclassical economic perspective, advances in material technology brought about by increasing demands for quantitative efficiency have raised and broadened the range of skill requirements and increased worker responsibility. This is the *upgrading* or *quantitative efficiency* thesis (Form 1980; Spenner 1983). For reasons of quantitative efficiency as well, this argument continues, the connection between formal education and

access to jobs at different levels of mental skill and responsibility has been strengthened over time (e.g., Clark 1962, p. 49).

From a strict credentialist perspective, there is, at best, a weak (and not obviously strengthening) connection between formal educational credentials and skill requirements, since skill requirements vary little among jobs. At the same time, there is a strong (and not clearly weakening) connection between relative (but not absolute, due to educational upgrading) level of schooling and access to jobs at different levels of responsibility or autonomy.

From Marxism, finally, Braverman (1974; also see Marglin 1974; Rinehart 1975; Bluestone and Harrison 1982; Wright and Singlemann 1982; but see Kusterer 1976) argued that the skill requirements and autonomy or responsibility in most jobs have decreased over time with changes in the technology of capitalistic enterprise. This is the *downgrading* or *qualitative efficiency* thesis (Form 1980; Spenner 1983), which differs sharply from the qualitative efficiency thesis in its descriptions of and explanations for temporal changes in the skill requirements and autonomy of jobs. Braverman (1974, pp. 441–43) also took issue with the technical-functional argument by suggesting that education's importance for job access at different skill and autonomy levels has declined.²

What case can be made, then for the quantitative and qualitative efficiency and mixed-effects theses, as these describe changes over time in the distribution(s) of skill(s) in

¹ And, perhaps somewhere in between, there is a newly emergent, mainly Marxist, view of the connection between schooling and paid work in capitalist societies, which argues that the relationship between the two varies systematically between and within labor-market segments (Edwards 1979; also see Gordon, Edwards, and Reich 1982). Briefly, Edwards, Gordon, and their colleagues contended that systems of control adopted by firms in capitalism have emerged in historical sequence from the simple to the technical to the bureaucratic. Across all three markets, there is a general correspondence between individuals' educational qualifications on the one hand and mental-skill requirements and job autonomy on the other. Specifically, workers under simple control tend to be the least well educated, and those under bureaucratic control the most. Within each of the three, however, it is only in the expanding, independent primary labor market that workers' educational qualifications and the skill and autonomy requirements of their jobs are strongly related (Edwards 1979, pp. 117–83).

² At the same time, Gordon, Edwards, and Reich (1982) favored a Marxist variant of the mixed-effects thesis, arguing that, "in contrast to those who emphasize only deskilling, we would emphasize . . . substantial reskilling as well" (p. 203). Also, as the bureaucratic form of control structure pervades and proliferates, and workers are increasingly drawn into the independent primary market, formal education should become more useful to employers as a criterion for job access at different levels of skill and autonomy.

Finally, Wright and Martin (1987) offered an upgrading thesis that incorporates the central tenets of postindustrial theory into Marxism. Briefly, they argue that ". . . the technological transformations charted in postindustrial theory expand the importance precisely of those productive assets—organization and knowledge—that are the basis of postcapitalist mechanisms of exploitation and thus postcapitalist classes" (p. 24).

the occupational structure? In general, the available research, which is almost entirely confined to U.S. studies (but see Myles 1987), favors the quantitative efficiency thesis (e.g., Mueller, Hybels, Schmiedeskamp, Sonquist, and Staelin 1969; Berg 1970; Berg, Freedman, and Freeman 1978; Rumberger 1981; Penn 1986; Myles 1987; Wright and Martin 1987) or mixed-effects theses (e.g., Dubnoff 1978; Spenner 1979, 1983) over the qualitative efficiency thesis (e.g., Wright and Singlemann 1982).

As Spenner (1983) pointed out, however, theory and research in this area are plagued by conceptual and methodological problems. First, researchers disagree on how to conceptualize and measure skill, although there is some agreement that job skills are multidimensional, with cognitive or substantive complexity and autonomy or responsibility as important aspects (Form 1987; Spenner 1983; Barber 1978). Second, some of the studies span periods of 40 or 50 years or more (e.g., Dubnoff 1978; Penn 1986), others are confined to periods as short as 5 years (e.g., Mueller et al. 1969), some go back as far as the turn of the century (e.g., Dubnoff 1978), and others deal only with a relatively recent period (e.g., Myles 1987; Rumberger 1981; Wright and Martin 1987; Wright and Singlemann 1982). These problems make it difficult to draw general conclusions about the different theses from existing research.

This paper investigates the changing relationship between formal education and occupational allocation over the middle half (circa 1930–80) of the 20th century in Canada through an historical analysis of the educational attainments of individuals and the skill requirements of their occupations on entry to the labor force. In particular, it addresses the following questions:

1. How have the distributions of skill and other task requirements for entry-level jobs changed with changes in the occupational structure in Canada in the 20th century?
2. To what kinds of occupations (in terms of skills and other task requirements) are people at different levels of formal education allocated?
3. How has the connection between people's levels of formal education and the skill and other task requirement of their first jobs changed over time?

Note that I consider only entry-level jobs here. Although technological change may

have consequences for the skill composition of entry-level jobs that mirror those for the occupational structure as a whole, it may affect entry and later-level jobs very differently. Consequently, I do not address issues of changes in skill levels for the occupational structure generally. The emphasis on entry to the labor market is due mainly to the assumption that the importance of formal education as a criterion for occupational access is greatest and most transparent at the point of initial involvement in the labor force. Later, such factors as the length and nature of an individuals' job experience and actual performance on the job assume increasing importance for occupational allocation, whereas formal education becomes less critical.

I also focus on the length of formal education, not denying that the content of one's educational program or the particular degree, diploma, or other certificate held are very important for occupational entry or that a more thoroughgoing test would incorporate indicators of other aspects of education. I only assert that years of schooling is read by employers as an indicator of either skills acquired or trainability (the technical-functional view) or as a signal of occupationally relevant attitudes and values (the credentialist perspective). To the extent that years of schooling provides access to high-skill jobs, this is evidence in favor of technical functionalism; insofar as it gives entry to jobs with requirements other than skill, this indicates credentialism.

DATA AND METHODS

The information employed here comes from two sources: the worker-trait data used in compiling the *Canadian Classification and Dictionary of Occupations*,³ or CCDO, (Canada 1971; Hunter and Manley 1986), and the Social Change in Canada project carried out under the direction of T. Atkinson, B. Blishen, M. Ornstein, and M. Stevenson (1977–81) at the (now named) Institute for Social Research at York University.

The CCDO worker-trait dataset was adapted and revised for use in Canada from the U.S. *Dictionary of Occupational Titles* or DOT (Spenner 1980; Cain and Treiman 1981).

³ Available as MRDF from author.

Recently, it has been used by Hunter and Manley (1986; also see Hunter 1986) to create a set of scales to measure the skill and other task requirements of occupations. Briefly, the worker-trait data contain information on worker functions, including complexity of work with data, things, people, and worker traits, including general educational development, specific vocational preparation, physical strength, six types of physical activities, ten interests, twelve temperaments and eleven aptitudes for over 6,500 occupations. There are also indicators for seven different aspects of the working conditions (e.g., "cold," "noise") for each occupation. This yields a total of 52 items. For this analysis, however, nine of these were deleted: the temperament for "working alone" (insufficient variation); the aptitude "finger dexterity" (identical to another item, "manual dexterity"); and the seven working conditions indicators (not directly related to the tasks involved in occupations).

The seven-digit occupational codes used in the CCDO are essentially just a more detailed version of the four-digit Standard Occupational Codes (SOC) used in the *Census of Canada*. Since these latter codes are commonly used in Canadian surveys, including the Social Change in Canada project and because it was necessary to merge the two datasets, I collapsed the seven-digit codes and averaged the worker-trait items within the four-digit categories. Once the data were collapsed and averaged, I applied a variety of confirmatory (Joreskog and Sorbom 1978) and exploratory factor-analytic procedures to them to develop a set of scales to measure the skill and other task requirements of occupations (technical details in Hunter and Manley 1986).⁴

⁴ The scales described below were derived using Guttman's (1953) image analysis with Harris and Kaiser's (1964) orthoblique rotation, using BMDP Statistical Software (Dixon 1981) running on an IBM 4341 mainframe under VM/CMS Release 4. Most of these scales were also replicated using other exploratory techniques and LISREL IV, and cross-checks were made to ensure that the scales developed using one technique were in fact measuring the same underlying constructs as were those developed using another. (For example, the scales for cognitive complexity, task diversity, and responsibility described below correlated .991, .948, and .916, respectively with their LISREL

Two of the scales can serve as indicators of different aspects of the intellectual or mental requirements of occupations:

1. *Cognitive or substantive complexity*, or the extent to which work involves tasks that require verbal, quantitative, and related mental abilities or capacities (Spencer 1983; Kohn and Schooler 1982; Barber 1978).
2. *Task diversity*, the degree to which an occupation or a job involves a wide variety of duties (Kohn and Schooler 1982; referred to in the negative as "routine activity" in previous publications, e.g., Hunter 1986; Hunter and Manley 1986).

A further scale appears to tap the extent to which individuals are responsible for theirs or others' performances:

3. *Responsibility or autonomy*, i.e., supervision, management, or guidance of self or others on the job (Spencer 1983; Kohn and Schooler 1982; Barber 1978; Scott 1964).

Two additional scales measure different aspects of communication:

4. *Verbal activity*, including talking, listening, and having business contact with people (Scott 1964).
5. *Persuasion*, or the degree to which an occupation or job involves influencing people outside any formal structure of authority.

Two aspects of physical activities were identified:

6. *Gross motor activity*, i.e., strength, hand-eye-foot coordination, climbing-balancing, stooping-kneeling-crouching-crawling.
7. *Fine motor activity*, or the amount of hand dexterity the work requires.

Finally, one scale emerged that was not well defined in any of the factor analyses (only one item of low factorial complexity):

8. *Creativity*, i.e., interpreting feelings, ideas, and facts (Holland 1973). Although I incorporate creativity in the analysis below, any results involving it can be given only the most tentative interpretation.

Most of these scales correspond closely to important theoretical variables in the sociology of work and organizations. At the same time, some of them suggest distinctions not

confirmatory counterparts.) The image-orthoblique combination, however, provided the most satisfying set overall in terms of theoretical relevance, ease of interpretation, and completeness.

always made in the literature. First, the literature does not always distinguish between cognitive complexity and task diversity. I retain both scales, however, since it is possible that the indicators point to distinct aspects of the task requirements of work that ought to be considered both independently and in relation to one another. In fact, cognitive complexity and task diversity are very highly correlated (see Table 2), indicating that most occupations that require cognitive complexity also involve varied tasks, with certain clear exceptions (e.g., dentistry). Second, although verbal activity is often mentioned, persuasion is not, although a factor resembling it frequently appears in exploratory studies using indicators from the DOT (e.g., Cain and Treiman 1981). Finally, although reference is often made to mental versus manual activities (e.g., Braverman 1974), different varieties of physical activity are seldom distinguished in social science, although the distinction between gross and fine motor activity is important in certain other sciences such as kinesiology.

Are these eight scales best regarded as eight different aspects of occupational skill requirements, or do some measure skills better than others? Unfortunately, the literature provides few good guides as to how to conceptualize skill and how to treat these scales in terms of it. If we define skill as the effective application of knowledge, or technical proficiency, however, there are grounds for arguing that some of these scales reflect skill very strongly, whereas others do not.

On grounds of factorial validity, I take the cognitive-complexity scale as measuring the depth or *intensity* of skill and the task-diversity scale as tapping the breadth or *extensivity* of skill. I interpret the other six scales as indicators of other aspects of the task requirements of occupations that do not directly imply skill per se. First, the contents of the items that define both the cognitive-complexity and task-diversity scales directly denote knowledge embodied in performance on the job. In the case of cognitive complexity, it is the degree or intensity of (primarily) quantitative and verbal reasoning skills; in task diversity, it is the range or extent of the different duties to which knowledge is applied. The items that define the other six scales do not *in themselves* refer to technical proficiency (e.g., the high level of fine motor activity in concert piano playing or dentistry

reflects great skill, but that in most garment sewing or typing does not). Second, in the factor analysis, general educational development had a high coefficient on cognitive complexity and a moderate one on task diversity; specific vocational training had a high coefficient on task diversity and a moderate one on cognitive complexity (also see Jones 1980). These two items had trivial coefficients, however, on all of the other six factors. Cognitive complexity and task diversity, then, are distinguished from the other dimensions of the task requirements of work in that they typically entail greater or lesser amounts of classroom or on-the-job training. Such training is ordinarily a requirement for acquiring a skill, as skill is defined here.

Finally, autonomy or responsibility assumes particular importance in the literature on occupations in general, and in the upgrading, downgrading, and mixed-effects theses in particular. Consequently, it has a prominent place in my analysis, although it will not be treated as an aspect of skill as such.

The Social Change in Canada project was a three-wave, national study of adults carried out in 1977, 1979, and 1981, using a multi-stage stratified-cluster design. In 1979 and 1981, the sample was supplemented to compensate for panel attrition. Since the panel aspect of the study was not important here, but sample size was, I treated the three waves as one for present purposes. This involved using those cases present in 1977, plus those cases added in 1979 and 1981 (but see below), yielding a total sample of over 5,000 persons.

How adequate is such a sample to the task? A satisfactory sample in this case would consist of probability subsamples of all Canadians entering the labor force on a full-time basis for each year in the period covered. The three waves of the Social Change in Canada project are intended, when properly weighted, to be a probability sample of Canadian adults for 1977, observed in 1977, 1979, and 1981. Strictly speaking, then, these data could provide a probability sample of Canadians entering the labor force in 1977 only. The older people are, the more likely they are to die, but the probability of death at any given age is not homogeneous across such social categories as gender, education, and occupation. Consequently, those persons in the sample who entered the

labor force many years ago are likely to be less representative of their cohorts than are those who entered in more recent times. In particular, one might expect the former to be better educated and more highly skilled on the average, relative to their contemporaries, than the latter. This should be kept in mind in interpreting the results reported below.

Indicators for the year in which an individual first entered the labor force full-time after completing school, number of years of formal education, first full-time occupation after education, and gender were taken from the Social Change in Canada dataset. For each individual, the data used were those collected in the first wave in which he or she was present.⁵

It seems reasonable to expect that errors of recall for year of entry to the labor force and first full-time occupation are higher for older than for younger respondents. Concerning year of entry, the high correlation between year of entry and age (see note 5) suggests that this problem is not serious. As for first full-time occupation, if these errors are essentially random within age categories, but larger in variance for the old than for the young, then this is not likely to be a major problem. The statistical procedures to be used below (regression analysis with occupation-based indicators as *dependent* variables) are quite robust against violations of the assump-

tions of homoskedasticity and random measurement error in the dependent variable (Bohrnstedt and Carter 1971).

Since the Social Change in Canada project used four-digit 1971 *Census of Canada* Standard Occupation Codes, which are very similar to the four-digit codes of the CCDO, it was possible to attach scores on the eight scales to each occupation represented in the panel study. This provided the data for the analysis below. When those sample members who had never worked full-time for pay following the completion of education were omitted (predominantly persons still in school and older women who had never entered the workforce), information was available for about 4,000 persons.

The analysis proceeded in three steps. First, I regressed each of the eight scales on year of entry to the labor force to address the question of how the work content distributions for entry-level jobs have changed over time. Year of entry to the labor force full-time ranged from 1908 to 1981, although the overwhelming bulk of the cases were after 1930; the mean was 1958 for men and 1959 for women. Since the CCDO worker-trait data represent estimates of the task content of work at only one point in time (circa 1965), we can only speak to changes in the occupational *structure*, assuming that changes in the content of work within individual occupations have not grossly and systematically altered the rank orderings of occupations over time. Although this is a big assumption, it may not be unreasonable. For one thing, some authors (e.g., Wallace and Kalleberg 1982) use occupational earnings as a proxy for skill, and the occupational-earnings hierarchy changes very slowly over time. Canadian data show average intercensal occupational-earnings correlations on the order of .90 for males and .80 for females in the period 1931–81 (Fillmore 1986). For another, the multiple correlation between the eight scales and the Canadian equivalent of Duncan's socioeconomic index for four-digit occupations in the 1971 *Census of Canada* is approximately .87 (Hunter and Manley 1986, p. 62), and the occupational-status hierarchy appears to have remained relatively stable over the middle half of the 20th century in Canada and the U.S. (Hodge, Siegel and Ross 1964; Pineo and Porter 1967). Also, for this assumption to be violated, changes in the rank orderings of occupations would have to have

⁵ Because no question was included in the 1977 wave for year of first full-time job, respondents' answers to this question in the 1979 and 1981 waves were regressed on age to ascertain if age could be transformed in the 1977 wave and used as an accurate surrogate for 1977 respondents present in 1977 only ($N=883$). The correlation between year of first full-time job and age was .95, so age was used in a regression equation to generate estimates for missing values on year of first job. Likewise, no question on number of years of formal education was asked in 1977, although level of education (e.g., "high school graduate," "bachelor's degree") was asked. Data on number of years of formal education and level of education in the 1979 and 1981 waves were used to determine the numbers of years associated with each level. Then, these values were used to transform level of education in 1977 to a metric of years for those respondents present in the panel in 1977 only. The correlation between years of formal education and level of education transformed into year equivalents for the 1979 and 1981 respondents was .97.

been not only major, but *nonrandom*. For example, occupations that were once high-skill would have to have become low-skill, those once low-skill would have to have become high-skill, or both kinds of changes would have to have occurred. Such systematic changes seem highly unlikely. Fortunately, the statistical procedures employed here yield unbiased results in the presence of random error in the dependent variable, which seems quite likely.

Second, I regressed each of the scales on years of schooling to identify what kinds of occupations people at different levels of formal education enter.

Finally, I regressed each of the scales on year of entry to the labor force full-time and years of formal education to analyze changes in the relationship between schooling and job content over time.

ANALYSIS

Table 1 shows the means and standard deviations for the study variables for men and women separately. Men and women are analyzed separately throughout, since the results were not always the same for both. Given the high values of the standard deviations relative to the means, these data show that, contrary to the strict credentialist position, there is real variation across occupations in cognitive complexity and task diversity, the two dimensions of occupational skills—at least as much as there is in the other aspects of the task requirements of occupations.

Table 2 presents the product-moment correlations among the study variables, with

the coefficients for the men above the diagonal and those for women below it.

Table 3 presents the results from a series of unstandardized regression analyses (constant terms omitted), in which each of the eight scales was regressed on the indicator for year of first full-time employment, separately for females and males. I used unstandardized regression analyses to facilitate female-male comparisons.

These data suggest that changes in the occupational structure over time in Canada have had the effects of raising the cognitive-complexity and verbal-activity requirements and of lowering the gross motor activity requirements of both men's and women's entry-level jobs. In addition, men's first full-time jobs seem more frequently over time to have required persuasion and less frequently to have demanded fine motor activity, whereas women's initial occupations appear more often to have involved task diversity.

Tests for nonlinearities in the trends indicated above did not reveal any departures from linearity. Tests for gender by year of first full-time employment interaction (Table 3, column 5) suggest (a) that the increase over time in task diversity has been confined to women; (b) that men, but not women, have moved more quickly over time into jobs requiring persuasion; and (c) that the decrease in fine motor activity requirements has affected only men (compare columns 1 and 3).

Changes in the occupational structure, then, appear to have had the consequences of either leaving the skill requirements of jobs upgraded or unchanged overall, as shown in the results for cognitive complexity and task diversity. No deskilling can be seen in these data. Nor, given the nonsignificant coefficients for responsibility, is there evidence of any change in the average level of responsibility. Verbal activity and persuasion levels have either risen on the average or shown no net change. As for fine and gross motor activities, finally, there seem to have been either decreases in their average levels or no overall change. These data are broadly consistent with what one would expect from neoclassical economic, structural-functional, and postindustrial theory. They are not consistent with Braverman's (1974) argument.

Table 4 shows the results from a series of unstandardized regression analyses (again,

Table 1. Means and Standard Deviations, Study Variables, Men ($N=1,697$) and Women ($N=2,323$), Listwise Deletion

Variable	Men		Women	
	\bar{X}	s	\bar{X}	s
Years education	11.70	3.74	11.59	3.24
Year first job	1957.80	16.96	1958.84	16.37
Cognitive complexity	-.24	.95	-.15	.74
Task diversity	-.37	1.01	-.46	.86
Responsibility	-.23	.73	-.10	.72
Verbal activity	-.21	.84	.17	.80
Gross motor	.37	1.03	-.29	.67
Fine motor	.04	.78	.12	.72
Persuasion	.08	.89	.59	.70
Creativity	-.18	.66	-.08	.73

Table 2. Intercorrelations among the Study Variables, Males above Diagonal ($N=1,697$) and Females below Diagonal ($N=2,323$), Listwise Deletion

Variable	1	2	3	4	5	6	7	8	9	10
1		.34	.53	.38	.44	.46	-.49	-.05	.26	.23
2	.30		.06	.01	.04	.07	-.12	-.07	.09	.04
3	.62	.13		.88	.65	.72	-.67	.17	.15	.40
4	.54	.08	.87		.59	.59	-.48	.30	.00	.39
5	.48	-.00	.63	.67		.78	-.54	-.36	.62	.41
6	.44	.07	.65	.48	.73		-.68	-.24	.57	.20
7	-.35	-.16	-.59	-.34	-.22	-.54		.27	-.47	-.21
8	.09	.03	.23	.30	-.24	-.18	.16		-.72	.04
9	.24	.03	.28	.19	.63	.76	-.39	-.43		.24
10	.24	.02	.41	.50	.31	.14	-.16	.36	.14	

1 = years education

2 = year first full-time job after education

3 = cognitive complexity

4 = task diversity

5 = responsibility

6 = verbal activity

7 = gross-motor activity

8 = fine-motor activity

9 = persuasion

10 = creativity

constant terms omitted), in which each of the scales was regressed on years of formal education, separately for men and women. As these data suggest, formal education is very important for entry to occupations with high skill requirements for both men and women (all four coefficients for cognitive complexity and task diversity are significant at $p < .001$). The same is true for access to occupations with high levels of responsibility, verbal activity, persuasion, and creativity (all coefficients are significant at $p < .001$). As for motor activities, schooling appears to direct both men and women away from occupations requiring gross motor activity and to direct women toward occupations requiring fine motor activity.

Tests for gender by years of formal education interaction (Table 4, column 5) suggest that the relationships between schooling and occupational skill and other task requirements are not always the same for men and women. For task diversity, schooling is translated into high-skill occupations at a higher rate for women than for men. Likewise, for responsibility, fine motor activity, and creatively, each additional year of education is also worth more for women in terms of the associated increment in task content than it is for men. Finally, each additional year of formal education directs men away from jobs involving high gross motor activity more sharply than it directs women away from such jobs. In four of the

Table 3. Regressions of Occupational Skill Requirements on Year of Initial Employment, Males ($N=1,700$), Females ($N=2,330$), Unstandardized Coefficients, Constant Terms Omitted

Requirement	Males		Females		Male-Female Difference in b
	b	r^2	b	r^2	
Cognitive complexity	.004**	.004	.006***	.016	NS
Task diversity	.001	.000	.004***	.007	*
Responsibility	.002	.002	.000	.000	NS
Verbal activity	.003**	.004	.004***	.006	NS
Persuasion	.005***	.008	.001	.001	*
Gross motor	-.007***	.014	-.007***	.027	NS
Fine motor	-.003**	.004	.001	.000	**
Creativity	.002	.002	.001	.001	NS

* $p < .05$.** $p < .01$.*** $p < .001$.

Table 4. Regressions of Occupational Skill Requirements on Year of Formal Education, Males ($N=1,704$), and Females ($N=2,343$), Unstandardized Coefficients, Constant Terms Omitted

Requirement	Males		Females		Male-Female Difference in b
	b	r^2	b	r^2	
Cognitive complexity	.134***	.282	.141***	.381	NS
Task diversity	.103***	.143	.141***	.295	***
Responsibility	.086***	.197	.105***	.227	***
Verbal activity	.103***	.209	.108***	.193	NS
Persuasion	.063***	.070	.054***	.061	NS
Gross motor	-.134***	.241	-.073***	.125	***
Fine motor	-.008	.001	.021***	.008	***
Creativity	.040***	.052	.055***	.059	*

* $p < .05$.** $p < .01$.*** $p < .001$.

eight cases, then, formal education is more important for women than for men as a criterion for allocation to certain kinds of occupations; in one of the eight, it is more important for men.

Here, the odd theory out seems to be Collins's (1979) credentialism, along with Bowles and Gintis's (1976) version of the connection between schooling and mental skill requirements. Although formal education is important for access to occupations with high levels of responsibility, as the strict credentialist argument holds, it is no less important for access to occupations with high levels of skill, which does not follow easily from the argument. These results are, however, consistent with the technical-functional argument.

If occupations are differentiated in terms of their skill requirements, and if highly trained people tend to be sorted into high-skill occupations, there is also evidence of creden-

tialism in these data. Responsibility, verbal activity, persuasion, fine motor activity, and creativity do not imply skill as defined here. How is it, then, that (except for fine motor activity for men) formal education is in each instance an important allocative criterion for occupations requiring them (and an important criterion as well for occupations *not* requiring gross motor activity)? It appears that, for jobs not requiring gross motor activity, whether skilled or not, employers prefer the well educated; for those requiring gross motor activity, they prefer the less well educated.

Tables 5 and 6 put the above results together to track the relationships between occupational skill and other task requirements on the one hand and first year of full-time employment and years of education on the other, for males and females separately. This will allow us to examine the influence of each of the latter two variables on the former, controlling for the other. First, we will be

Table 5. Regressions of Occupational Skill Requirements on Year of Entry to the Labor Force and Years of Formal Education, Males ($N=1,696$), Unstandardized Coefficients, Constant Terms Omitted

Requirement	Year	Education	R^2	Year by Education Interaction
Cognitive complexity	-.007***	.146***	.297	NS ^a
Task diversity	-.008***	.115***	.159	NS ^a
Responsibility	-.005***	.094***	.210	NS ^a
Verbal activity	-.005***	.110***	.217	NS ^a
Persuasion	.000	.062***	.068	NS ^a
Gross motor	.003*	-.139***	.242	NS ^a
Fine motor	-.003*	-.007	.004	NS ^a
Creativity	-.002	.043***	.053	NS ^a

^a Interaction term not significant; excluded from equation.* $p < .05$.** $p < .01$.*** $p < .001$.

Table 6. Regressions of Occupational Skill Requirements on Year of Entry to Labor Force and Years of Formal Education, Females ($N=2,323$), Unstandardized Coefficients, Constant Terms Omitted

Requirement	Year	Education	R^2	Year by Education Interaction
Cognitive complexity	-.003***	.145***	.385	NS
Task diversity	—	—	—	***
Responsibility	-.007***	.117***	.251	NS ^b
Verbal activity	-.003***	.114***	.198	NS ^b
Persuasion	-.002*	.055***	.059	NS ^b
Gross motor	—	—	—	****
Fine motor	-.001	.021***	.008	NS ^b
Creativity	—	—	—	**

* Where interaction term significant, separate equations reported in Table 7.

^b Where interaction term not significant, excluded from equation.

* $p < .05$.

** $p < .01$.

*** $p < .001$.

able to see what kinds of jobs people have gotten over time within particular levels of formal education. Since the labor force has become better educated over time, if formal education selects for certain kinds of jobs, we should find that people at any particular educational level will be less likely to be found in these jobs in later periods than in earlier ones (and conversely for those kinds of jobs that formal education selects against). Second, we will be able to examine formal education and allocation to different kinds of jobs, holding year of initial employment constant. This should give us some insights as to the importance of each additional year of schooling for occupational entry over the entire time period and (inspecting the interaction term in the regression analysis) whether this has become greater or lesser in recent times.

In Tables 5 and 6, the coefficients for year of initial employment (column 1) show the effects of educational upgrading. For men at any given level of education, entry-level jobs have become less likely over time to involve cognitive skills, verbal activity, or fine motor activity and more likely to involve gross motor activity. For women at any given educational level, entry-level jobs have become less likely to require responsibility, verbal activity, or persuasion. In the cases of task diversity, gross motor activity, and creativity for women, the year-by-education interaction term was significant, making it impossible to assess the main effects of educational upgrading on occupational access.

Because significant interaction effects be-

tween year of first full-time employment and years of formal education were found in three cases for women, the regressions for the variables involved are reported separately for the periods before and since 1946 in Table 7 in an effort to see how the importance of formal education as a criterion for entry to jobs involving certain kinds of task content has changed over time. I chose the year 1946 because World War II is commonly regarded as a watershed in the development of the Canadian economy. Other cutoff dates were also investigated, including a three-way division: earliest-1939, 1940-1952, and 1953-latest, with essentially the same results in each case.

As the data in Table 7 show, formal education has become more important over time for women as a criterion for allocation to occupations involving high levels of task diversity, along with high levels of creativity. It has become less important as a criterion for jobs involving low levels of gross motor

Table 7. Regressions of Occupational Skill Requirements on Years of Formal Education, Year of Entry by Years of Formal Education Interaction, by Historical Period, Females ($N=2,323$), Unstandardized Coefficients, Constant Terms Omitted

Requirement	Before 1946		Since 1946	
	b	r^2	b	r^2
Task diversity	.133***	.288	.151***	.292
Gross motor	-.095***	.209	-.059***	.078
Creativity	.049***	.059	.060***	.060

** $p < .05$.

** $p < .01$.

*** $p < .001$.

activity. In three of sixteen tests, then, the importance of formal education appears to have changed over time. In two of these, it has increased.

The data in Table 7 cast additional doubt on the strict credentialist position, insofar as they suggest that the importance of schooling for access to jobs at different levels of skill has not decreased over time. Likewise, these data are difficult to reconcile with Braverman's (1974) suggestion that the importance of formal education as a criterion for employment has decreased in recent times. In only one of the 16 tests is there evidence that the importance of education for access to occupations has decreased over time. These data are, however, consistent with those theories that rest on a technical-functional interpretation of the relationship between schooling and work.

DISCUSSION

This research has examined how changes in the structure of Canadian entry-level occupations have been reflected in changes in the distributions of occupational skill, responsibility, and other task requirements. The results suggest that these changes have raised the demand for cognitive or intensive skills in entry-level jobs, but caused no rise or fall in the demand for responsibility. The changes have also raised the demand for occupations requiring verbal activity and lowered it for those involving gross motor activity, while the demand for creativity has neither risen nor fallen. Finally, for men, the demand for persuasion has increased and that for fine motor activity has decreased, while, for women, the demand for task diversity has increased.

No downgrading thesis is consistent with the evidence on the historical transformation of skill and responsibility requirements for entry-level jobs in the Canadian occupational structure. Although the neoclassical economic, structural-functional, postindustrial formulation is often less than precise in its implications, it is not obviously inconsistent with what we have seen. At the same time, this research speaks only to changes at the level of occupational structure, not to changes within particular occupations. It also refers only to entry-level jobs, not to jobs generally. Consequently, we must not apply findings reported here to theories of downgrading

within occupations or to propositions concerning the occupational structure overall.

I have also examined how formal education operates as an allocative criterion for different kinds of jobs. In particular, schooling seems to prepare people for high-skill occupations with considerable autonomy and verbal activity and low levels of gross motor activity. In the case of women, it also facilitates entry into occupations requiring high fine motor activity (e.g., secretarial). Finally, the importance of schooling for entrance into occupations at different skill levels has not decreased over time.

One theoretical conclusion that emerges is that strict credentialist arguments (Collins 1979; Bowles and Gintis 1976) do not obviously apply to Canada. Entry-level jobs are differentiated in their skill requirements. Schooling is quite clearly related to the skill requirements of first jobs. Also, contrary to Braverman (1974), the importance of formal education as an allocative criterion for assignment to jobs at different levels of skill is now greater than earlier. These findings are consistent with the neoclassical economic, structural-functional, and postindustrial arguments. At the same time, formal education is related to selection for occupations with high responsibility requirements, as the strict credentialist position maintains, as well as for those with high requirements for verbal activity, persuasion, fine motor activity (for women) and creativity, and low requirements for gross motor activity.

During the middle half of the 20th century, the transformation of the Canadian occupational structure, especially the decline of agriculture and the growth in white-collar jobs, has evolved in the direction of an increased demand for job skills and a decreased demand for gross motor activity, at least for entry-level jobs. In addition, it has also moved toward an increase in the occupational demand for persuasive tasks and a decrease in the demand for fine motor activity for men, and an increase in the demand for task diversity for women. Whether the demand for skill or some other occupational task requirement may have increased or decreased, formal education is a major factor in determining which individuals enter certain kinds of jobs, except for men and jobs requiring fine motor skills. Each occupational requirement for which structural shifts have pressed demand upward, however, is also one

that is positively associated with formal education (compare Tables 3 and 4). Conversely, each requirement for which changes in occupational composition have pressed demand downward is also one that is negatively associated with schooling (except for men and fine motor activity). And, finally, to the extent that the importance of schooling as an allocative criterion for jobs with different kinds of skill or task requirements has changed over time, it has generally increased—at least for women (Gaskell 1982). Taken together, these observations suggest the articulation of educational systems and labor markets in Canada, close throughout the period surveyed here, has become even closer.

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LOCAL FRIENDSHIP TIES AND COMMUNITY ATTACHMENT IN MASS SOCIETY: A MULTILEVEL SYSTEMIC MODEL*

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This study presents a multilevel empirical test of a systemic theory of community attachment in mass society. The data bases are derived from a recent national sample of 10,905 residents of 238 localities in Great Britain that vary across an urban-rural continuum. The first stage of analysis examines the structural determinants of between-community variations in local friendship ties, collective attachment, and rates of local social participation. Community residential stability has positive effects on all three dimensions of community social integration, independent of urbanization, density, and numerous other controls. The second stage of analysis examines the extent to which community characteristics affect individual-level local social bonds. Residential stability has both individual-level and contextual effects on locality-based friendships and on participation in social and leisure activities. The results support the systemic model and demonstrate the importance of linking the micro- and macro-level dimensions of local community bonds.

Studies of the local community have an important and long-standing research tradition in sociology. From the early writings of Toennies ([1887] 1957) and Wirth (1938) to more recent contributions (e.g., Kasarda and Janowitz 1974; Hunter 1974; Fischer 1982; Wilson 1985; Freudenburg 1986), community research has yielded a rich body of evidence on the determinants of local social bonds (e.g., friendships, community sentiment, social participation). The continuing significance of community research rests in large part on its macro-social focus on properties of collectivities (Durkheim [1895] 1964). Particularly from a human ecological perspective (Hawley 1950), community research is grounded in a macro-level framework that focuses on ecological, social structural, and cultural symbolic dimensions (Hunter 1974, p. 190; Frisbie 1984, p. 127). A fundamental assumption of the ecological approach is that social systems exhibit structural properties that can be examined apart from the personal characteristics of their indi-

vidual members (Berry and Kasarda 1977, p. 13; Hawley 1950, p. 179).

It is therefore surprising that contemporary research on local community bonds has concentrated on individuals as the causal unit of focus. To be sure, the major independent variables from the Wirthian tradition have usually been ecological (e.g., urbanization, density). Still, the unit of analysis in this tradition has for the most part been the individual (e.g., individual sentiments and psychological functioning). Even competing explanations to the urbanization thesis have used individual demographic characteristics. A recurrent research issue deals with the relative effects of urbanization, life cycle, social status, and age on individual estrangement, alienation, and retreat from community social participation (for reviews see Hunter 1974; Fischer 1977, 1982; Tsai and Sigelman 1982; Baldassare 1979; Wilson 1985; Willmott 1987).

As a consequence, research has neglected two crucial issues: the macrosocial determinants of community social organization and the contextual effects of community structure on individual behavior. A major reason for this gap appears to be the typical design of the sample survey in modern sociological research. As Coleman (1986, p. 1315) has argued, "an important element in the replacement of community studies by survey research—almost unnoticed, it seems, by the discipline—was a shift in the unit of analysis

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(the unit about which empirical statements were made) from the community to the individual." In effect, the emphasis on representative population surveys has channeled research to an individual level of analysis and to a focus on causally proximate (i.e., individual) factors. Moreover, Baldassare (1979, pp. 47–50) noted that, even if researchers consider a macro or contextual perspective, it is especially difficult to obtain a survey sample of residents that is sufficient to construct macro-level measures across a large number of communities that vary along the urban-rural dimension. Accordingly, when they examine macro-level factors, sociologists must typically rely on census data that rarely provide adequate measures of theoretical interest. And while ethnographies (e.g., Gans 1962) provide rich descriptive accounts of community processes, they are too few to provide quantitative data on macro-level variations.

This paper attempts to link the micro and macro levels of analysis through a two-stage, multilevel approach to the study of local community bonds. At the macro (between-community) level, the analysis first examines the structural determinants of community social organization. At the micro (i.e., individual) level, the study replicates Kasarda and Janowitz's (1974) systemic model in a contextual framework by examining the simultaneous effects of both individual *and* community factors on individual-level dimensions of community attachment. This research design is made possible by analysis of a unique national sample of approximately 11,000 residents of 238 localities in England and Wales that vary along the urban-rural continuum.

THEORETICAL FRAMEWORK: A MULTILEVEL SYSTEMIC MODEL

In an influential contribution to the literature, Kasarda and Janowitz (1974) examined two competing models of the local community. The first they termed the *linear-development* model, derived from the classic tradition of Toennies and Wirth. In this model, increased size and density are the primary exogenous factors that influence social behavior. The forces of urbanism are hypothesized to weaken community kinship and friendship bonds, social participation in local affairs, and affectional ties for the community (Wirth 1938; see also Fischer 1977, 1982).

In contrast to the linear-development model,

the *systemic model* focuses on length of residence as the key exogenous factor that influences attitudes and behavior toward the community. Kasarda and Janowitz (1974, p. 330) argued:

Since assimilation of newcomers into the social fabric of local communities is necessarily a temporal process, residential mobility operates as a barrier to the development of extensive friendship and kinship bonds and widespread local associational ties. Once established, though, such bonds strengthen community sentiments.

Using survey data from a national sample of England, Kasarda and Janowitz (1974) provided empirical support for the systemic model. Independent of urbanization, density, and other factors (e.g., SES, life cycle), length of residence was positively related to individual local friendships, community sentiment, and participation in local affairs. Neither large population size nor high density significantly weakened local social bonds (p. 334). Kasarda and Janowitz's rejection of the linear-development model thus rested on explaining individual-level variations in community attachment as a function of an *individual's* length of residence.

However, the systemic model clearly suggests that length of residence has additional implications at the macro (community) level. Indeed, community residential mobility is posited as a key barrier to community-level social organization (Kasarda and Janowitz 1974, p. 338; Shaw and McKay 1942; Kornhauser 1978). The latter is conceptualized as an essential aspect of mass society with ecological, social-structural, and normative dimensions, with the specific effects of residential mobility located in the community's "system of friendship and kinship networks and formal and informal associational ties rooted in family life and on-going socialization processes" (Kasarda and Janowitz 1974, p. 329). The logic of Kasarda and Janowitz's theory is inextricably tied to a basic focus of the human ecological paradigm: the locality-based social networks and collective identity that constitute the core social fabric of human communities (Hawley 1950, p. 220; Hunter 1974, p. 190). But for the reasons noted earlier, macro-level variations in systemic and cultural-symbolic dimensions of community (e.g., friendship networks, rates of social participation, collective attachment) have rarely been empirically

examined in previous research (see, e.g., Hunter 1974; Christenson 1983).

The systemic model also points to the role of community-level residential stability in promoting an individual's social integration into the community. An individual in a highly mobile area faces quite different constraints than residents of stable areas—regardless of his or her own length of residence. For one thing, an individual in all likelihood has fewer opportunities to form friendships and to participate in local affairs in areas of high residential turnover. And if residential mobility increases institutional instability (Kornhauser 1978, pp. 78–81), then individuals in unstable communities will find fewer opportunities for organizational contact. The motivation to form local friendships may also be reduced in areas of high population turnover since residents know such friendships will not last (Freudenberg 1986). Moreover, neighborhood instability and population change may reduce individual sentiments for the community, both for long-term residents and newcomers. Few research efforts, however, have been able to systematically examine the contextual effects of community residential stability and other systemic characteristics on individual-level local bonds (cf. Baldassare 1979; Fischer 1977, 1982).

Hypotheses and Analytic Strategy

To address the limitations of prior research, I examine two sets of hypotheses. The first stage of analysis examines the macro-level component of systemic theory. The main hypothesis is that community residential stability has direct positive effects on macro-social variations in (a) the extent of community-based friendship ties; (b) the level of collective attachment; and (c) social activity patterns (e.g., rate of participation in local organizations and leisure-time activities). These effects are hypothesized to be independent of urbanization and other social factors (e.g., age composition, social class).

The second stage of analysis examines the extent to which community characteristics affect individual behavior: that is, I assess their contextual effects. The major prediction is that both length of residence and community residential stability will increase an individual's local friendships, attachment to community, and social participation in local

activities.¹ I assess the contextual effect of residential stability while controlling for an individual's location in the social structure (e.g., SES) and other socio demographic characteristics (e.g., age, life cycle, fear). If the multilevel version of Kasarda and Janowitz's systemic model is correct, then not only will individual and community effects emerge, but both will operate independently or urbanization and density.

In short, I advance a multilevel test of the systemic model for two related reasons. First, a macro-social focus on communities is theoretically important in its own right (Hawley 1950). Second, the systemic model provides strong theoretical rationale that individuals are influenced not just by their own characteristics (e.g., length of residence), but also by those of *others* in the community. Note that a macro-level analysis is important with respect to assessing contextual effects on individual behavior. By examining the hypothesized effects first in terms of their ability to explain between-community differences, the chance of interpreting (unexplained) residuals as contextual effects is reduced (Hauser 1970; Simcha-Fagan and Schwartz 1986, p. 679). In other words, the identification of substantive contextual effects of community residential stability and other systemic characteristics on individuals is not based on arbitrary or ad hoc procedures, but stems from an a priori theory based on differences in community structures.

DATA SOURCES AND RESEARCH PROCEDURES

The data in this study come from the British Crime Survey (BCS), a nationwide survey of

¹ The underlying position of this study is that local social bonds have relevance at both the individual and community level. For example, there is a clear conceptual and empirical distinction between one's individual-level friendships and the density of acquaintances and friendship networks in a community (Freudenberg 1986; Wellman 1983; Fischer 1977). Similarly, while individuals may differ in terms of local sentiment, communities also vary in levels of local identity and collective attachment (Christenson 1983; Hunter 1974). And while social participation varies by individual, it also varies across space and time (Hawley 1950; Choldin 1984), leading to a concern with both individual participation and rates of social participation.

10,905 residents of England and Wales conducted in 1982 under the auspices of the Research and Planning Unit (Home Office 1982). Although the general goal of the survey was to examine victimization experiences, the design of the BCS was informed by a broad theoretical mandate to measure the social and demographic background, lifestyles, and community attitudes of residents of England and Wales. This nationally representative survey provides a large and comprehensive data base to replicate Kasarda and Janowitz's (1974) original study based on a 1967 national survey of 2,199 England residents. Kasarda and Janowitz (p. 330) noted that the high degree of cultural homogeneity and the unified system of central and local government in England yields clear advantages for community research. The current data set has an additional advantage over the 1967 survey because it includes the city of London.

Most importantly, the BCS research design facilitates macro-level community analysis. Specifically, in the first stage of enumeration, 238 of the 552 parliamentary constituencies in England and Wales were selected with probability proportional to the electorate (Hough and Mayhew 1983, p. 38). In half (119) of the selected constituencies, one electoral ward was selected with probability proportional to the electorate. In the other 119 constituencies, two polling districts were selected, also with probability proportional to the electorate. Then, within each ward and polling district, addresses were chosen with probability proportional to the number of electors listed there. In all, 60 addresses were drawn in each of the 238 areas (60 in each ward, 30 in each of the two polling districts), resulting in a final issued list of 13,702 nonempty addresses from which one respondent aged 16 or older was randomly selected and interviewed. A favorable 80 percent response rate generated 10,905 residents (mean age = 42) distributed across the 238 sampling units. The sample drawn from each geographical unit is representative of a relatively small, homogeneous locality that reasonably approximates the concept of "local community."²

² Similar to U.S. census tracts, the average size of electoral wards in England and Wales is just over 5,000 (see Office of Population Censuses and

Most national samples result in too few persons in any one geographic area to construct structural variables—especially across an urban-rural dimension. In contrast, the within-area BCS samples are large enough (average = 46) that, in conjunction with the comprehensiveness of the survey instrument, one can construct theoretically relevant community-context variables that are not dependent on census data. Therefore, using the geographical-area identifiers for each household, responses to selected survey questions were aggregated within each of the 238 localities and structural variables constructed (e.g., means, percentages). Two data files were created: (1) a community-level file of 238 cases representing the macro-social properties of each locality;³ and (2) a contextual file of individuals with community information attached to each case.

Measures of Community Context

Residential stability is defined as the percentage of residents brought up in the area within a 15-minute walk of home. Note that the "15-minute walk" survey definition meshes well with the relatively compact size of each sampled area. *Local friendship ties* is defined as the percentage of community residents who reported half or more of their friends living within a 15-minute walk of home. *Collective attachment* refers to the level of sentiment and attachment to community, and is defined as the percentage of residents that reported they would be "very sorry" to leave the local area.

Five measures were created to reflect variations in rates of social participation. The first is a general indicator of the social-

Surveys 1984, pp. xi, 2). For more information on parliamentary constituencies and wards, see Todd and Butcher (1982). I emphasize that while the theoretical focus is on the local community, the technical unit of analysis was administratively defined and, hence, is only a proxy. For further discussion of the use of administrative units to proxy "local communities" in sociological research, see Fischer (1982, pp. 271-72) and Choldin (1984).

³ To assess possible contamination by the sampling design, I conducted preliminary analysis separately on both types of areas (i.e., on the 119 electoral wards and 119 areas comprised of two polling districts). The results were substantively identical and thus the full sample of 238 localities is used.

activity level of the community and is defined as the mean number of nights community residents went out of the home in the week prior to the interview for leisure, social, or other spare-time activities. But while useful as general indicator, this measure does not distinguish type of participation or locality. So I created four specific submeasures from a more detailed question in which each respondent was also asked to report social participation and leisure activities for each night of the week by type of activity: (1) *visiting friends and relatives*; (2) *leisure entertainment* (e.g., going to pubs, restaurants, movies, etc.); (3) attendance and/or participation in *sporting events*; and (4) *organizational participation* (e.g., committee meeting, clubs, etc.). To provide a conservative test of locality-based participation, I restricted the scoring to those events that the respondent reported walking to and, hence, can be reasonably assumed to have occurred within the local community. Again, this is theoretically consistent with the 15-minute walk survey definition of community, and it provides a strict measure of contact and involvement with the local geographic area. The resulting structural measures refer to the percentage of residents who participated in each type of activity in the previous week.

The sample covers an urban-rural continuum parallel to the urbanization dimensions analyzed by both Kasarda and Janowitz (1974) and Fischer (1982). Specifically, a 4-category indicator of rural communities, suburban areas and small towns outside major cities, metropolitan areas of cities, and central-city areas is used as the main indicator of urbanization.⁴ There are 94, 35, 61, and 48 communities within rural, suburban, city, and central-city areas, respectively. To capture community variations in density *within* each level of urbanization, the percentage of housing units in multiple-dwelling-unit structures was constructed and entered as a predictor.⁵

⁴ Central-city areas were sampled in higher proportion than their population would justify so that there would be a sufficient representation of inner-city residents. For further description of sampling procedures, the technical design of the BCS, and the classification of urban and rural areas, see Hough and Mayhew (1983), Webber (1978), and Wood (1983).

⁵ A measure of population density per square

In addition to urbanization and density, I selected six macro-level control variables to provide a strict test of the independent effects of community stability. Four of these variables are traditional predictors based on past research: *family structure* (percent divorced/separated); *socioeconomic status* (combination of percent college-educated and percent high economic status); *age composition/life cycle* (mean number of children under 16); and *unemployment rate*. Two additional factors neglected in past research are also included: *fear* (percent of residents who feel unsafe walking their neighborhood streets at night); and the *victimization rate* for serious predatory crime (burglary, assaultive violence, robbery, and purse snatching). As Fisher (1982, p. 263) and others (e.g., Skogan 1986) have argued, crime and the neighborhood fear it engenders are potentially powerful forces in decreasing local community bonds. Surprisingly, however, few researchers have controlled for either levels of subjective fear or objective crime rates, both of which are correlated with urbanization, in assessing community attachment.⁶

Individual-level Measures

The key exogenous variable in the systemic model is *length of residence* in the community (ranging from less than one year to entire life). *Local friendships* is a five-category

mile was not available. All analyses were repeated with another indicator of density (percent household crowding), but no differences in patterns resulted. These results, in addition to tests for other potentially confounding variables, are reported below.

⁶ While there are good reasons to specify an area's victimization rate as a control variable in predicting attachment to the community and leisure activity patterns (e.g., walking to local events), it is probably more likely that local friendship ties reduce crime and deviance (e.g., through informal social control) rather than the reciprocal (Freudenberg 1986). However, the direction of the friendship-crime relationship does not interfere with examination of the central theoretical interest—the multilevel effects of residential stability. Furthermore, dropping victimization had no substantive impact on the results for either individual or community-level friendship ties. To simplify the presentation and provide a conservative test, the victimization rate is a control variable in all models.

response (ranging from none of them to all of them) to the question used to derive the aggregate indicator: "How many of your personal friends live in this area (within about 15-minute walk of here)?" *Individual attachment to community* is a five-category response (from very pleased to very sorry) to the question: "How would you feel about moving away from this area?" The BCS data are very complete on these and other items: the percent of missing data is only .003 percent for local friendships and .004 percent for attachment. This means the aggregate indicators are in effect based on complete data.⁷

The individual-level indicator of total social activity is the number of nights (0–7) spent outside the home for leisure activities. Note that the night-time distinction disentangles in large part social associations related to work (e.g., business lunches, etc.). Because of the limited time frame (one week), the distributions of the four specific types of social activity (visitation, entertainment, sporting events, and organizational participation) were highly skewed. Therefore, in the individual-level analysis, I used a simple dichotomy in which persons who reported participation in a particular category (e.g., visiting kin) were assigned a one and nonparticipants a zero.

To counteract misspecification of individual-level relations and, hence, arbitrary interpretation of residual differences as "contextual effects" (see Hauser 1970; Blalock 1984), I selected six individual-level control variables

to reflect the basic dimensions of life-cycle stage, demographic background, SES, employment, and fear of crime (see Fischer 1977, 1982; Kasarda and Janowitz 1974; Willmott 1987). The variables are labor-force participation (1 = employed or in labor force); marital status (1 = married); age; social class;⁸ number of children in household; and fear of crime. These control variables parallel those analyzed at the macro level.⁹

COMMUNITY-LEVEL RESULTS

Before turning to the multivariate findings, the descriptive data indicate that the communities vary substantially along theoretically relevant dimensions. Thus, although a third of residents were brought up in the community, the proportion of long-term residents varies from 0 percent to almost 75 percent. The variables tapping the three endogenous community factors also vary widely: local friendship ties range from zero to 87 percent. Similarly, the level of collective attachment ranges from 7 to 75 percent of residents reporting high levels of attachment. I now address the nature of these variations with respect to the theoretical model.¹⁰

Table 1 presents the weighted least-squares (WLS) regression model of the structural determinants of local friendship ties, collective attachment, and total rates of leisure activity across the 238 localities in England

⁷ The friendship and leisure activity questions were asked only in a follow-up interview of all victims and a random selection (40 percent) of nonvictims. The major contextual analysis is necessarily based on this sample ($N = 6,329$), and the structural variables referring to friendship ties and social/leisure activities are based on an average within-area sample size of 27. All other questions and aggregate measures were derived from the full sample of 10,905 persons. Weights are available to address the oversampling of victims of crime and also of central-city residents (see Hough and Mayhew 1983). However, as is typical in stratified designs (e.g., Fischer 1982, p. 301), analysis of the weighted data produced results substantively equivalent to the unweighted analysis at both the individual and macro levels (results available on request). Because the primary interest is the parameter estimates of the causal model (see Dumochel and Duncan 1983), the results below (except means) are based on the unweighted data.

⁸ I measured social class by combining indicators of college education and high occupational status (professional or managerial positions). Individual-level indicators of household-head income are not used because of substantial missing data.

⁹ Theoretical guidance is not available to justify specifying contextual effects of these and other controls on individual attachment above and beyond the individual-level indicator. Nevertheless, to be safe, I ran preliminary individual-level models with the contextual controls included (e.g., percent unemployed). Expectedly, the major findings did not change.

¹⁰ Where possible, I also compared the means of structural variables with available census data for England and Wales. The results matched very closely. For example, the present estimate of percentage college educated is 13.3 percent, compared to 13.7 percent for the national census estimates; for home ownership, my estimate of 58 percent compares with 60 percent for the country. All descriptive statistics are available on request.

Table 1. WLS Structural Model of Variations in Local Friendship Ties, Collective Attachment, and Leisure Activity Patterns Across 238 British Localities

Community Characteristics	Local Friendship Ties		Collective Attachment		Leisure Activity Patterns	
	beta	t-ratio	beta	t-ratio	beta	t-ratio
Residential stability	.43**	6.91	.15**	2.53	.25**	3.46
Urbanization	-.15*	-1.79	-.26**	-3.36	.21**	2.27
Density	-.14*	-1.66	-.04	-.50	-.12	-1.24
Divorce rate	.04	.71	.02	.28	.07	1.02
SES	-.09	-1.45	.03	.49	.06	.81
Mean # children < 16	.09	1.52	-.16**	-2.70	.01	.09
Unemployment rate	.01	.17	-.04	-.78	-.03	-.39
Victimization rate	-.06	-.83	-.12*	-1.78	.06	.75
Neighborhood fear	-.08	-1.01	-.28**	-3.89	-.25**	-2.88
	$R^2 = .34, p < .01$		$R^2 = .39, p < .01$		$R^2 = .12, p < .01$	

* $p < .10$.** $p < .05$.

and Wales.¹¹ The first two columns support the structural version of Kasarda and Janowitz's (1974) systemic model. Net of urbanization, density, and six other macro-level control variables, residential stability has a large direct effect (Beta = .43, $p < .01$) on local friendship ties. Indeed, the standardized effect of stability is approximately three times greater than the effect of either urbanization (-.15) or density (-.14).

The data in columns 3 and 4 indicate that collective levels of attachment are lowest in communities characterized by residential mobility, urbanization, density of youth, a high victimization rate and, most important, high levels of fear and distrust about local safety. Unlike friendship ties, the predictive power of residential stability is not high relative to urbanization. This makes sense from the perspective of systemic theory because assimilation of residents into local friendship networks is more of a temporal process than is the formation of local sentiment (Kasarda and Janowitz 1974, p. 330). Hence, collective community attachment is less dependent on variations in population turnover.

Rates of total leisure and social activity are explained by three community characteristics: residential stability, urbanization, and levels of fear. Interestingly, though, rates of leisure and social activity are *positively* related to urbanization—Britons in large cities seem to be more socially active than their rural and suburban counterparts. And similar to collective attachment, perceptions of danger strongly reduce rates of leisure activity. Fear of crime appears to have negative consequences for community collective attachment and social participation.

The interaction between urbanization and residential stability is examined in Table 2. Specifically, I repeated the WLS-regression models in two types of areas where urbanization differences are maximized: rural areas and inner-city areas. Because of the differing variances in community context in rural and urban areas, both raw and standardized coefficients are presented. This model further tests the major thesis. If the effects of community stability on friendship ties are as strong in the densest areas as in rural settings, then the structural-systemic model is supported. Such a test is also important insofar as the physical distance between neighbors in rural areas, even very stable ones, may constrain opportunities for local friendships.

The data in panel A of Table 2 indicate that the effect of residential stability on friendship ties is just as strong in central-city areas as in rural areas. In fact, the unstandardized effect is slightly larger in central cities than in the country, but the difference is not significant at the .05 level. Again, other exogenous characteristics fail to account for any substantial

¹¹ Because the number of individual cases used to create the community measures varied slightly by locality, the variances of the residuals in ordinary-least-squares regression are not constant. Therefore, weighted-least-squares regression is used to induce homoskedasticity of error variances; each case is weighted by the square root of the unweighted sample size in each of the 238 localities (see Hanushek and Jackson 1977, pp. 143, 152). This procedure gives more weight to observations with a greater number of respondents and, hence, smaller measurement error.

Table 2. WLS Structural Model of Variations in Local Friendship Ties Across British Localities, by Extent of Urbanization

Community Characteristics	Local Friendship Ties					
	Rural areas (N=94)			Inner cities (N=48)		
	<i>b</i>	beta	<i>t</i> -ratio	<i>b</i>	beta	<i>t</i> -ratio
Residential stability	.456**	.48	4.63	.504**	.52	3.47
Density	-.218	-.10	-1.09	-.041	-.08	.45
Divorce rate	.348	.08	.92	-.409	-.12	-.92
SES	-.728	-.07	-.65	-.715	-.12	-.71
Mean # children < 16	1.454	.02	.21	4.432	.10	.54
Unemployment rate	.359	.08	.87	-.769*	-.26	-1.91
Victimization rate	-1.010	-.08	-.91	-.106	-.01	-.11
Neighborhood fear	-.102	-.08	-.82	.184	.19	1.15
			$R^2 = .34, p < .01$			$R^2 = .52, p < .01$

Community Characteristics	Local Friendship Ties					
	Rural areas (N=94)			Inner cities (N=48)		
	<i>b</i>	beta	<i>t</i> -ratio	<i>b</i>	beta	<i>t</i> -ratio
Residential stability	.517**	.54	5.98	.639**	.66	5.10
Crowding	-.431	-.05	-.57	.001	.01	.05
% Home owners	-.076	-.09	-1.06	.027	.04	.32
% Minority	-.249	-.06	-.72	.177	.20	1.54
			$R^2 = .32, p < .01$			$R^2 = .43, p < .01$

* $p < .10$.** $p < .05$.

portion of the variance in friendship ties, as no variable is significant at the .05 level. Note especially that density has no effect in either urban or rural areas.

To further test the independent effects of stability, I introduced three potentially confounding variables: home ownership, percentage of minorities in the community, and percent crowding. The respecified results in panel B are consistent, as none of the alternative predictors effects local friendship ties. In contrast, residential stability continues to have very large positive effects on friendship ties both in rural and highly urbanized areas. Clearly, not only does residential stability have direct effects on friendship ties, but these effects are essentially *identical* at both ends of the urban-rural continuum. Urbanization, therefore, does not condition the effect of community systemic structure.¹²

Table 3 examines the four subdimensions of locality-based social participation and leisure activity. To account for community

differences in lifestyles and opportunities regarding transportation, auto usage is controlled (see Willmott 1987, p. 22). Residential stability has significant positive effects on rates of visits to friends and relatives in the community, participation in sporting events, and going to local entertainment (e.g., dances, pubs, restaurants). On the other hand, density has no effects on social activity, while urbanization only moderately decreases the level of local participation in sporting events. The data suggest that long-term community stability engenders collective use of local facilities—despite SES, urbanization, and auto use. The only noticeable theoretical anomaly is that the level of organizational and club participation is unrelated to community stability.

I conducted several sets of validity tests to verify the results at the macro level. All regression models were repeated, as in panel B of Table 2, by introducing percent minority, percent homeowners, and crowding as alternative exogenous predictors. The major results were unchanged. As to multicollinearity, intercorrelations among independent variables were quite moderate: 25 out of 28 were less than .40, and the largest was only .51. Accordingly, variance inflation factors

¹² I also examined interaction terms for urbanization and stability for the models predicting collective attachment and social/leisure activities, but they were not significant.

Table 3. WLS Structural Model of Variations in Locality-based Social and Leisure Activity Participation Rates Across 238 British Localities

Community Characteristics	Rates of Social Activity							
	Visiting friends/relatives		Entertainment (dances, pubs, restaurants)		Sporting events		Organization/ committee meetings	
	beta	t-ratio	beta	t-ratio	beta	t-ratio	beta	t-ratio
Residential stability	.15**	1.96	.33**	5.01	.23**	3.10	.02	.20
Urbanization	-.05	-.51	.03	.36	-.18*	-1.78	-.05	-.46
Density	-.02	-.21	-.09	-.99	.06	.55	-.02	-.22
Divorce rate	.01	.20	.09	1.38	-.10	-1.30	.11	1.44
SES	-.06	-.82	.01	.14	.07	.85	-.03	-.33
Mean # children < 16	-.06	-.82	.06	1.05	-.12*	-1.69	.04	.49
Unemployment rate	.08	1.18	.06	.89	.03	.43	.03	.41
Victimization rate	.08	1.02	.01	.15	.05	.68	-.15*	-1.87
Neighborhood fear	-.09	-1.05	-.13*	-1.65	.02	.24	-.08	-.83
Motor vehicle usage	-.16	-1.53	-.38**	-4.02	-.19*	-1.76	-.05	-.59
	$R^2 = .11, p < .01$		$R^2 = .33, p < .01$		$R^2 = .11, p < .01$		$R^2 = .05, p > .05$	

* $p < .10$.** $p < .05$.

were much below traditional levels of concern.¹³ I also used influential observation techniques (see Cook and Weisberg 1982), but no one locality was found to exert a disproportionate influence on the parameter estimates.

CONTEXTUAL SOURCES OF INDIVIDUAL-LEVEL LOCAL BONDS

Having established empirical support for the macro-level model, I turn in Table 4 to the contextual effects of community structure on individuals.¹⁴ As hypothesized by the systemic model, the largest predictor of individual local friendships is length of community residence. However, residential stability has a significant ($p < .01$) contextual effect as

well: independent of length of residence, six sociodemographic controls, and urbanization/density, community residential stability directly increases local friendships. Urbanization and life cycle (children in house) also have predicted effects, the former decreasing and the latter increasing local friendships. In any event, while the contextual effect of residential stability is clearly much less than the individual-level effect, the former is still the second-largest predictor of local friendships. Regardless of length of residence and other personal characteristics, community-level instability apparently reduces local friendship ties by constraining individual friendship choices. And as argued earlier, the motivation to seek out new friendships is also likely to be inhibited by rapid population turnover in a community.

The strongest predictor of attachment to community and total leisure activity is age, which increases attachment but has a strong negative effect on lifestyle. Fear of crime also depresses attachment and nonhousehold social activity. Nonetheless, individual length of residence directly increases both attachment and social activity, while community residential stability has a significant, though small, contextual effect on leisure activity. As before, urbanization has dual effects; urban residents are more active socially, but express less attachment to the community.

Data on the multilevel effects of residential stability on local friendships within rural areas and central cities again support the

¹³ I also conducted analyses to empirically test the construct validity of the key macro-level indicators of urbanization, density, and SES, controlling for other community factors. All three variables had significant *independent* effects on an external criterion (delinquency rates) in the theoretically expected fashion ($B = .21, .25$, and $-.28$, respectively). Therefore, the weak predictive power of urbanization, density, and SES with regard to friendship ties is not due to construct invalidity or lack of independent variation across areas (e.g., collinearity between urbanization and density).

¹⁴ Because of the large sample size, alpha levels are reduced from .10 and .05 to .05 and .01. As a result of the stratified sampling design, these significance levels are only approximate.

Table 4. OLS Contextual Model of Individual-level Variations in Local Friendships, Attachment to Community, and Leisure Activity in Great Britain ($N=6,001$)

Exogenous	Individual-level					
	Local Friendships		Attachment to Community		Leisure Activity	
	beta	t-ratio	beta	t-ratio	beta	t-ratio
<i>Individual</i>						
Length of residence	.26**	20.11	.09**	6.77	.05**	3.86
Labor-force participation	-.03**	-2.58	-.02	-1.68	.04**	3.29
Marital status	-.01	-.74	-.03*	-2.26	-.16**	-12.89
Age	-.00	-.32	.20**	13.73	-.32**	-22.93
Social class	-.04**	-3.47	.01	1.02	.03**	2.85
Children in household	.06**	4.50	.01	.99	-.13**	-10.11
Fear of crime	-.03	-1.93	-.13**	-10.02	-.13**	-10.12
<i>Community</i>						
Residential stability	.07**	4.92	.00	.37	.03*	2.06
Urbanization	-.06**	-3.52	-.10**	-5.82	.04*	2.35
Density	-.02	-1.54	-.03	-1.60	-.04**	-2.68
Victimization rate	-.02	-1.25	-.08**	-5.72	.00	.03
	$R^2 = .10, p < .01$		$R^2 = .10, p < .01$		$R^2 = .19, p < .01$	

* $p < .05$.** $p < .01$.

systemic model (see Table 5). Local friendship bonds are strongly related to length of residence within both rural areas and central cities. Indeed, individual residential stability has the largest effect, and it is similar across the urban-rural continuum. Moreover, independent of the individual effect, community stability has statistically and substantively important contextual effects on local friendships. Significantly, individual and community residential stability have the largest effects on local friendships *within* central cities.¹⁵

The maximum-likelihood (ML) logistic-regression estimates of the detailed specification of local social participation and leisure activity are shown in Table 6.¹⁶ The pattern of

effects is consistent. In *every* type of community involvement, individual-level length of residence significantly increases participation. Further, in three of the four types of social participation, community stability has direct positive effects. The largest contextual effect is on local entertainment and leisure activities ($C/s.e. = 6.29$). Only for involvement in committees and organizations does community stability fail to attain significance. On the other hand, neither urbanization nor density has the predicted "loss of community" effects. Indeed, there is no influence of these ecological factors on local visitation and organizational participation, and urbanization and density are positively related to engagement in local entertainment activities and sporting events, respectively.¹⁷

Further Tests

In Kasarda and Janowitz's original theory

"pseudo" measures of explained variance in logistic models (e.g., Aldrich and Nelson 1984, pp. 56-59), I emphasize instead the ratios of coefficient to standard error ($C/s.e.$), which are analogous to OLS t -ratios.

¹⁷ Age and motor vehicle use tend to sharply reduce local social activities. But these and other effects (e.g., marital status, labor-force participation), in addition to controls for urbanism, density, and crime, only reinforce the consistent multilevel effects of residential stability.

¹⁵ I also examined the following interactions for their effects on local friendships, attachment, and social activity: length of residence \times community stability; length of residence \times urbanism; urbanism \times community stability. In no case did the interaction terms significantly improve the fit of the model.

¹⁶ Because of the skewed and dichotomous nature of these measures, the assumptions of OLS regression are violated. To address this issue, logistic regression is used, which, unlike log-linear analysis, preserves the interval nature of predictor variables (see Hanushek and Jackson 1977; Aldrich and Nelson 1984). The coefficients may be interpreted as changes in the log odds of social participation associated with a unit change in the exogenous variable. Because of the criticisms of

Table 5. OLS Contextual Model of Individual-level Local Friendships in Great Britain, by Extent of Urbanization

Exogenous	Individual-level Local Friendships					
	Rural areas (N=2,340)			Inner cities (N=1,178)		
	b	beta	t-ratio	b	beta	t-ratio
<i>Individual</i>						
Length of residence	.248**	.27	12.57	.185**	.22	7.55
Labor-force participation	-.027	-.02	-.75	-.009	-.01	-.20
Marital status	-.105*	-.04	-2.09	.052	.02	.80
Age	.003*	.06	2.34	-.001	-.01	-.37
Social class	-.166**	-.08	-3.76	-.026	-.01	-.43
Children in household	.080**	.08	3.61	.009	.01	.31
Fear of crime	-.010	-.01	-.42	.037	.04	1.18
<i>Community</i>						
Residential stability	.005**	.07	3.33	.008**	.10	3.27
Density	-.001	-.01	-.38	-.000	-.01	-.25
Victimization rate	-.032*	-.04	-2.02	-.003	-.01	-.20
$R^2 = .11, p < .01$			$R^2 = .08, p < .01$			

* $p < .05$.** $p < .01$.

(1974, p. 335), an individual's local friendships were hypothesized to influence individual attachment on the grounds that the more ties an individual has in the community, the more his/her attachment to that community will increase. The theoretical logic of the systemic model also suggests that the level of *collective* community attachment may influence an individual's assessments and evaluations of the community (cf. Hunter 1974; Christenson 1983). For example, residents of communities where collective sentiment is

high (and arguably, community solidarity), may be more apt to evaluate the community positively than those in areas where the climate of local opinion is mostly negative.

Furthermore, social-network theory (see, e.g., Wellman 1983; Freudenburg 1986; Fischer 1977) suggests that the density of friendship ties in a community comprises a structural constraint that does not characterize any one individual. For example, a sparse or nonexistent pattern of local friendship networks probably indicates fewer opportunities for individuals to

Table 6. Maximum-Likelihood Logistic-Regression Predicting Contextual Model of Individual-level Participation in Local Social and Leisure Activities in Great Britain (N=6,001)

Exogenous	Individual-level Social Activity							
	Visiting friends/relatives		Entertainment (dances, pubs, restaurants)		Sporting events		Organization/ committee meetings	
	Coeffi- cient	C/s.e.	Coeffi- cient	C/s.e.	Coeffi- cient	C/s.e.	Coeffi- cient	C/s.e.
<i>Individual</i>								
Length of residence	.160**	3.29	.084*	2.47	.264**	2.62	.234**	2.78
Labor force participation	-.400**	-3.19	-.220**	3.77	-.116	-.57	-.267	-1.36
Marital status	-.523**	-4.12	-.242**	-2.63	-.367	-1.35	-.092	-.47
Age	-.028**	-7.92	-.028**	-9.94	-.047**	-5.25	-.002	-.48
Social class	-.234	-1.56	-.098	-1.10	.088	.34	.106	.58
Children in household	-.090	-1.51	-.052	-1.29	-.006	-.06	-.050	-.53
Fear of crime	.002	.04	-.365**	-8.05	-.056	-.46	-.092	-.98
Motor vehicle	-.734**	-5.79	-.786**	-8.58	-.284	-1.11	-.408*	-1.97
<i>Community</i>								
Residential stability	.008*	1.99	.018**	6.29	.022**	2.93	-.002	-.44
Urbanization	-.070	-1.04	.094*	1.96	-.216	-1.58	-.026	-.25
Density	.000	.24	-.001	-.61	.016*	2.39	-.000	-.05
Victimization rate	.026	.91	.021	1.07	.024	.43	-.110*	-2.03

* $p < .05$.** $p < .01$.

form new local ties, regardless of length of residence. Therefore, to further test the systemic model, I examine the effects of community-level friendship ties in lieu of community stability on individual-level local friendships, and the effects of both individual-level local friendships and level of collective attachment on individual attachment to community. This model represents an example of the contextual effects of the mean level of a dependent variable on individual behavior, a specification often ignored in contextual effects models (Blalock 1984, p. 363).¹⁸

The empirical results in Table 7 support the revised systemic model of Kasarda and Janowitz (1974). First, in panel A, both individual length of residence and mean community-level friendship ties have independent effects on an individual's local friendships ($B = .27$ and $.14$, respectively). These effects are substantial and are at least three times greater than the effects of urbanization and density. Second, in panel B, both an individual's length of residence and his or her local friendships significantly increase attachment to the community. Moreover, the direct effect of local friendships is more than double that of length of residence. This pattern corroborates the causal sequence hypothesized by systemic theory, in which length of residence increases local friendships, which in turn increases community attachment (p. 330). The direct effect of length of residence on attachment is thus reduced once local friendships is controlled (cf. Table 4). In a similar vein, the effect of community residential stability is reduced to zero when added to the model in Panel A, whereas the direct effect of mean friendship ties remain large ($B = .13$).

Finally, the data show that residents of areas where the mean level of attachment is high also report greater sentiment for the

Table 7. Respecified OLS Contextual Model of Individual-level Variations in Local Friendships and Attachment to Community in Great Britain ($N = 6,035$)

A. Exogenous	Individual-level Local Friendships		
	<i>b</i>	beta	<i>t</i> -ratio
<i>Individual</i>			
Length of residence	.242**	.27	21.31
Labor-force participation	-.062**	-.03	-2.83
Social class	-.096**	-.04	-3.53
Children in household	.056**	.06	4.67
Fear of crime	-.023*	-.03	-2.05
<i>Community</i>			
Mean friendship ties	.445**	.14	10.60
Urbanization	-.035*	-.04	-2.37
Density	-.000	-.01	-.37
$R^2 = .11, p < .01$			
B. Exogenous	Individual-level Attachment to Community		
	<i>b</i>	beta	<i>t</i> -ratio
<i>Individual</i>			
Length of residence	.053**	.05	3.98
Local friendships	.134**	.12	9.34
Marital status	-.052	-.02	-1.62
Labor-force participation	-.020	-.01	-.83
Age	.013**	.19	14.70
Fear of crime	-.141**	-.11	-8.71
<i>Community</i>			
Mean attachment	.599**	.20	12.79
Urbanization	-.026	-.02	-1.39
Density	.000	.00	.11
Victimization rate	-.016*	-.03	-2.00
$R^2 = .14, p < .01$			

* $p < .05$.

** $p < .01$.

community, all else equal. Indeed, the effect of collective attachment is strong ($B = .20$), about equal to that of age. Importantly, the effect of urbanization is not statistically significant once collective attachment is controlled. Interaction terms did not significantly improve the model.¹⁹

¹⁸ Because this analysis focuses on contextual effects of \bar{Y} , I recalculated the community measures by subtracting each individual's score from the community sum, and dividing by $N-1$ (i.e., each person was assigned the community mean after his or her response was removed). Therefore, individuals did not contribute to the macro-level indicator for their own community, eliminating any definitional or artifactual dependence between independent and dependent variables. Also, to achieve a parsimonious model, only those variables that had coefficients greater than 1.5 times their standard errors in Table 4 were retained in the estimation.

¹⁹ To verify both the OLS and maximum-likelihood contextual analyses in Tables 4 to 7, I retained the significant determinants of local social bonds and then introduced three additional micro-level variables (gender, ethnicity, and home ownership) to guard against possible misspecification error at the individual level, and hence faulty interpretation of community effects. All estimates for the major theoretical variables were robust to these changes in model specification, increasing our confidence that the general results are not spurious.

SUMMARY AND CONCLUSION

This study presented evidence from a large national survey of England and Wales that replicates and extends a systemic model of community attachment in mass society. At the macro level, the empirical analysis established that local friendship ties vary widely across communities and that these variations are positively related to community stability. In particular, macro-level stability strongly increased local friendship ties at either end of the urban-rural continuum. Residential stability also had independent but less powerful effects on collective attachment to community and participation in local social and leisure activities. These general effects were robust to a variety of specifications and persisted despite urbanization, density, and a wide variety of controls.

The second stage of analysis examined the contextual sources of individual-level variations in local social bonds. Consistent with the prediction of the systemic model of community (Kasarda and Janowitz 1974), length of residence had direct effects on individual-level local friendships, attachment to community, and participation in local social activities. Moreover, community residential stability had significant contextual effects on individual-level local friendships and participation in local social activities (visitation, entertainment, and sporting events). Importantly, the multi level effects of stability were additive and independent of a host of both micro- and macro-level controls, including urbanization and density.

The data also showed that the community's mean level of friendship ties had a significant and substantively important contextual effect on an individual's local friendships. Similarly, the contextual effect of collective attachment on an individual's attachment to the community was strong and positive. The structural constraints imposed by aggregate friendship patterns, as well as the normative climate reflected in levels of collective attachment, apparently exert independent influences on individual behavior and attitudes toward the community. Overall, the data suggest that the important social forces that undermine an individual's integration into the local community are not urbanization or the compositional factors (e.g., low social class) as suggested in traditional theory. Rather, they are multilevel systemic factors such as residential mobility and sparse friendship ties,

and other factors anticipated but just beginning to be understood—fear of crime (Fischer 1982, p. 263; Skogan 1986) and attenuated collective attachment (Hunter 1974; Christenson 1983).

Despite these theoretically suggestive results, methodological limitations of the data and findings temper definitive conclusions. Most important, since ecological boundaries were defined for governmental purposes, the units of analysis at the macro level did not represent true communities in the traditional sociological sense. Second, the social participation variables were not as precise as one would like; activities during the day were not measured and types of organizations were not specified. Third, the individual-level attachment and participation items were based on single items rather than scales, and, without question, more sophisticated measures are needed to properly examine a community's network of friendships (see Fischer 1982; Wellman 1983; Willmott 1987; Freudenberg 1986). Finally, the proportion of variance explained was modest, suggesting the presence of measurement error and possible omitted variables.

Nevertheless, these limitations should be balanced against the clear advantages afforded by the BCS design in terms of multilevel analysis. Rarely does a study contain enough persons in the same geographic area to permit construction of theoretically relevant macro-level measures across a large number of communities. The ability to measure dimensions of social organization at the community level, however imperfect, represents a contribution to the linking of micro- and macro-level models of the local community. While survey data may have led to an overemphasis on social-psychological theory testing in the past, the present results demonstrate that this need not be the case.

In this regard, future research should improve on the present effort by using survey data in innovative ways that permit more precise measurement of the processes by which community social integration is affected by *both* individual-level and broader, structural-level forces. Of particular interest would be further examination of the micro- and macro-level factors that influence individual friendships and leisure activities in the community, and how these in turn feed back to effect the community's macro-level system of social organization.

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RESEARCH NOTES

BACK TO THE FUTURE: ADULT POLITICAL BEHAVIOR OF FORMER STUDENT ACTIVISTS*

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This research is the second follow-up study of 1960s civil rights activists and two control groups. The data support Mannheim's theory of distinctive intragenerational units who are agents of social change. In addition, confirmatory factor analysis verified five separate dimensions of political behavior. Civil rights activists scored the highest on four measures of active conventional and unconventional politics. The noninvolved in college politics are the least active as adults. Although both the protesters and the institutional activists are highly involved in politics, they tend to be on opposite sides in various political arenas.

INTRODUCTION

The research objective is to study the long-term consequences of student protest. The question is whether early patterns of student political behavior are good predictors of adult politics. Former radical civil rights activists are compared to institutional activists (former student government leaders) and a random sample of noninvolved undergraduates. An earlier 10-year follow-up study showed that former radical activists in their thirties were significantly more politically active on a five-item scale than either of the control groups (Fendrich and Tarleau 1973).

Twenty-five years after leaving college, this cohort is beginning to reach the chronological age of maximum political participation (Verba and Nie 1972). Contrary to the "Big Chill" syndrome, some scholars believe that the critical mass of three million radicals from the 1960s will be major political actors during the 1990s (e.g., Harrington 1972; Lerner 1988). They will be the political leaders of one of the largest identified voting blocks (*Times Mirror* 1988). A longitudinal study

provides an excellent opportunity to explore this prediction.

This research builds on Mannheim's theory of political generations ([1928] 1972). Mannheim argues that generational differences are not a direct function of age or biology but of major political and social events occurring during young adulthood (ages 18–25). He contends that there can be different intragenerational units within the same age cohort. Subgroups within the same age cohort cultivate the materials of their common experiences in different yet specific ways, constituting separate intragenerational units. Generational replacement becomes one of the major engines of social and political change (Jennings 1987) as distinctive intragenerational units mature.

Empirical studies (Fendrich and Tarleau 1973; Jennings 1987; Marwell, Aiken, and Demerath 1987) support Mannheim's theory that distinctive generational units form out of intense youthful politics. However, previous research has not focused on the dimensions and levels of adult political involvement.

Conceptual and methodological advancements by Verba, Nie, and Kim (1971) and by Milbrath and Goel (1977) since our 10-year longitudinal study make it possible to measure the multidimensionality of political behavior. These researchers recognized the importance of analyzing patterns of political behavior beyond voting studies. Using cluster and factor analysis, they discovered that political participation is multidimensional.

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Moreover, political behaviors can be arranged hierarchically according to the threshold or difficulty of behavior and the resources and talents political participants have at their disposal.¹

Subsequent work by Milbrath and Goel (1977) verified six dimensions of political behavior. The first, voting and patriotic activity, reflects activities that political sociologists define as "passive support" for the political system. The remaining five dimensions are *active* forms aimed at influencing the polity. In their analysis, Milbrath and Goel found that active respondents have higher SES backgrounds, particularly on measures of education. They also claim there is a small number of political activists who score high on all the dimensions. These are the complete activists.

There are three advantages of the data set we use in this analysis. First, student politics occurred during the early 1960s, providing the longest time span between student and adult politics. Compared to previous research, the data provide a more rigorous test of student politics' effect on adult politics. Second, no other data set has a comparison group of institutional activists. This group provides a means of comparing radical activists with a different intragenerational unit of political activists who were not involved in protests. Third, the research provides a unique opportunity to explore the level of political involvement among the groups on established multidimensional measures of political behavior.

DATA AND VARIABLES

The research design is partially determined by our first follow-up study. Data were gathered using an after-only design with the three

groups selected on the basis of previous student political involvement. The research subjects are former students of Florida State University in Tallahassee, Florida, one of the major centers of the civil rights movement in the early 1960s (Matthews and Prothro 1966; Rabby 1984).²

The three groups occupy positions along a continuum of student political activism. At one extreme are the radical civil rights activists, who engaged in noninstitutional protest politics, using the tactics of political confrontation to radically change the racial practices of Southern institutions. At the other extreme are the noninvolved undergraduates. Between these two groups are the institutional activists whose political expression followed a consensual, cooperative model of adult institutional politics. As student government leaders, they were playing anticipatory socialization roles for adult politics, which was not unusual for the South at that time (e.g., one former student body president at Florida State University eventually became governor). Student government leaders did not approve of segregation; however, they strongly disapproved of student protest tactics. Like their adult counterparts, student government leaders felt the civil rights movement was going too far, too fast.³

In 1971 we mailed a total of 150 questionnaires (50 for each group); 95 people (63 percent) returned the questionnaires. In 1986, we used the addresses of the 10-year follow-up study, current addresses from the alumni office, phone directories, and phone calls, to locate 101 of the original 150 subjects. Eighty-five returned questionnaires.⁴

² For more information on the original protest environment and the design of the 1971 follow-up study, see Fendrich and Tarleau (1973).

³ In one incident, an appointed member of student government who was head of the Interfaith Council, announced he wanted to be the first white to integrate the black university, Florida A & M. Student government dismissed him from office. The same person had a cross burned on his lawn and his car partially destroyed.

⁴ Of the total number of white male students originally sampled, we know that five are deceased. It was more difficult to trace former activists. Geographically, they were more dispersed than the two control groups. Both our phone calls to difficult-to-trace subjects and the volunteered comments on the questionnaires reveal that the former radicals had less favorable memories of

¹ Working independently with cross-cultural data Verba et al. (1971) found four distinctive factors: voting and patriotism, local community activism, parochial or individualized interest in contacting public officials, and party and campaign participation. Using data from the U. S., Milbrath and Goel (1977) found five distinct clusters: voting and patriotism, political communication, party and campaign participation, local community activism and protest. Verba et al. did not have protest items or political communication as a separate dimension of politics. Milbrath and Goel lacked items measuring the parochial-interest dimension.

The dependent variable is a modified 20-item scale measuring different dimensions of political behavior: (1) Protest; (2) Community Activism; (3) Party and Campaign Participation; (4) Political Communication; (5) Parochial Interest; and (6) Voting and Patriotism. There were four responses for each item: regularly, occasionally, seldom, and never. Respondents were asked, "During the past two years, have you . . ."

A confirmatory factor analysis was used to discover whether the same factor structure existed for our data set as in the previous research by Milbrath and Goel (1977). The results are a five-factor solution.⁵ The one separate dimension that was not confirmed was Parochial Interest; this item loaded on the Community Activist factor. Being a candidate for public office also loaded on the Community Activism factor instead of Party and Campaign Participation. Otherwise, the other five factors are comparable.

ANALYSIS

Table 1 reports the percentage of active political participation by student politics. Each item is listed under the appropriate factor. The percentages reported are sums of those who expressed some level of activity, i.e., everyone who did not answer "never."

All three groups of college graduates are more active than reported findings for national samples (Verba et al. 1971; Milbrath and Goel 1977). This is not surprising given the high levels of education and the fact that the respondents are in the age group of prime political activity. The noninvolved college students have a level of political participation closest to national participation rates.

The ex-student radicals and institutional activists are very active in adult politics. They

participate in a wide range of local activities. They are more active in political parties and campaign work. They work harder at keeping informed and informing others about politics. In addition, the former radical activists continue to engage in political protest, and they score substantially lower on the two items measuring patriotism.

Table 2 reports the analysis of variance for the dimensions of political participation by student politics. In addition to the dimensions in Table 1, a sixth, Complete Activist, is added. It is the sum of the four active dimensions of political behavior. The higher the scores, the higher the political participation.

The findings are quite clear. The radicals are more politically active on every dimension except Voting and Patriotism, the most passive form of political behavior. They are especially more active in political protest. They also are more active on the three institutional dimensions of political behavior: local community politics, party and political campaign work, communicating and trying to persuade others to vote. Finally, they score significantly higher on the complete-activism measure.

The institutional activists are the second most active group. On the conventional forms of political activity, the institutional activists have mean scores closer to the radicals. On the unconventional-protest measure, their mean score is closer to the noninvolved. They are also the most patriotic.

Although ex-radicals and institutional activists are very active as adults, the content of their politics differs. Unreported data show that 40 percent of the institutional activists are involved in the Republican party, but none of the radicals. In contrast, 61 percent of the radicals, compared to 33 percent of the institutional activists, are involved in the Democratic party. On a measure of political self-identification and two measures of political attitudes—one measuring radical conservatism and the other measuring attitudes toward the Reagan administration—the two groups are statistically different beyond the .0001 level. Open-ended responses to questions revealed praise for the Reagan administration from institutional activists and contempt from radicals. The groups' participation in voluntary organizations also differs. Radicals now belong to progressive political and humanitarian organizations, whereas the insti-

their experiences while attending the university. We suspect our responses may be biased toward the attitudes and behaviors of the less alienated former protestors. This bias works against the confirmation of distinctive intragenerational units. Our response rate is comparable to the Marwell et al. (1987) mailed survey. After 19 years they were able to locate 145 of 223 activists and had an 80 percent response rate.

⁵ The extraction method for the factor analysis was Generalized Least Squares (GLS) with varimax rotation. The factors were retained if their final statistic eigenvalue was ≥ 1 .

Table 1. Active Participation by Student Politics

Factor Item	Radical Activists (%)	Institutional Activists (%)	Noninvolved (%)
<i>Protest</i>			
Join in a protest march	61	7	9
Attend protest meetings	74	37	25
Participate in any form of political activity that could lead to arrest	61	7	6
<i>Community Activism</i>			
Be a candidate for office	17	20	9
Work with others on local problems	83	83	63
Form a group to work on a local problem	61	53	34
Contact local officials on social issues	87	60	59
Contact a local, state, or federal official about a particular personal problem	74	67	66
Go with a group to protest to a public official	83	37	13
<i>Party and Campaign Work</i>			
Join and support a political party	87	77	69
Take an active part in a political campaign	87	80	59
Participate in a political party between elections as well as at election time	70	70	38
<i>Political Communication</i>			
Keep informed about politics	100	100	100
Engage in political discussions	100	100	97
Send messages to a political leader when they are doing well or poorly	83	80	63
Inform others in my community about politics	91	87	69
Try to persuade others how to vote	91	83	81
<i>Voting and Patriotism</i>			
Vote in elections	96	100	96
Have a feeling of love for my country	87	100	100
Show my patriotism by flying the flag or in some other way	52	97	91
<i>N=</i>	23	30	32

tutional activists are in conservative organizations.⁶ Both belonged to professional organizations. In political arenas, these two groups continue to be on opposite sides.

SUMMARY AND CONCLUSIONS

This 25-year longitudinal study of early 1960s college students supports Mannheim's theory of distinctive intragenerational units. It confirms distinctive types of adult political behavior and the existence of complete activists. Political behavior in college was formative and an excellent predictor of adult politics.

Although our research design has the

merits of being able to compare three different intragenerational units from the 1960s, it is difficult to generalize the findings. However, independent research does report similar findings for political activists from the late 1960s (Jennings 1987; Marwell et al. 1987; Whalen and Flacks 1980). Both radicals and institutional activists represent only a small minority of the massive college cohort of the 60s. However, their contemporary significance should not be underestimated. Given the low levels of active political participation in the general population, these two distinctive groups are likely to have an influence on political institutions that extends beyond their sheer numbers.

The significance of the 1960s social movements and their participants has been trivialized (Bell 1976; Gitlin 1987). Empirical investigations suggest this characterization is in error. A different standard for evaluating the significance of the 60s activists is whether their adult behavior is consistent with the democratic ideal. The democratic ideal ex-

⁶ A number of organizations were factor-analyzed to confirm liberal and conservative dimensions. Examples of liberal organizations are "civil rights," "feminist," and "peace" groups. Conservative organizations included "anti-abortion" groups, "conservative PACS," and the "Moral Majority."

Table 2. Analysis of Variance for Dimensions of Political Participation by Student Politics

Student Politics	\bar{X}	s.d.	Cases	d.f.	Mean Squares	F
<i>Protest</i>						
Radical activists	5.61	1.99	23	2	33.72	13.03***
Institutional activists	3.80	1.85	30			
Noninvolved	3.47	.92	32			
<i>Community Activism</i>						
Radical activists	13.04	4.43	23	2	82.00	4.67*
Institutional activists	12.20	4.89	30			
Noninvolved	9.78	3.18	32			
<i>Party and Campaign Work</i>						
Radical activists	8.00	2.95	23	2	27.06	3.12*
Institutional activists	7.87	3.08	30			
Noninvolved	6.28	2.80	32			
<i>Political Communicators</i>						
Radical activists	16.39	3.33	23	2	80.55	6.19***
Institutional activists	15.63	3.78	30			
Noninvolved	13.19	3.63	32			
<i>Voting and Patriotism</i>						
Radical activists	8.87	2.32	23	2	43.63	17.71***
Institutional activists	11.33	1.12	30			
Noninvolved	10.91	1.22	32			
<i>Complete Activism</i>						
Radical activists	43.04	10.19	23	2	772.16	7.70***
Institutional activists	39.50	11.27	30			
Noninvolved	32.72	8.53	32			

* Significant at .05.

** Significant at .01.

*** Significant at .001.

pects citizens to be interested and informed about politics, actively participating in political parties and election campaigns and trying every way possible (including protest) to make their voices heard as political decisions are being made (Milbrath and Goel 1977). Our findings reveal that 1960s radicals and, to a lesser extent, institutional activists are the ideal citizens in the 1980s.

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ATTITUDE STRENGTH AND SOCIAL ACTION IN THE ABORTION DISPUTE*

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We develop and test several predictions about who feels most strongly concerning the legalization of abortion. Our initial prediction is that if those who hold a mixed stance about abortion are excluded, the remaining consistent supporters and opponents of abortion should show equal strength of feeling with regard to their respective positions. Using national survey data and several different measures of attitude strength, this prediction is disconfirmed: opponents of abortion are far more likely than proponents to regard the abortion issue as important. This finding holds true when religious affiliation is controlled. We further predict that blacks are less likely than whites to show strong feelings on the abortion issue, and this is confirmed. Finally, we predict that among pro-choice supporters, women will give greater importance to the issue than men, and this is also confirmed.

INTRODUCTION

Abortion is one of the most controversial social issues of our time. There has even been some concern about it becoming an overriding "single issue" in elections, with a passionate and committed minority having a disproportionately large impact on political outcomes (Granberg 1981; Steiner 1983; Casey 1984). In fact, the abortion issue did not play an influential role in the 1984 election (Granberg 1987), and this was also true in earlier congressional and presidential elections (Traugott and Vinovskis 1980; Jackson and Vinovskis 1983; Granberg and Burlison 1983). However, even if the impact of the abortion issue on the political process is not as great as some have feared, abortion policy is still a matter of intense debate.

The debate is dominated by two groups of activists: anti-abortion ("pro-life") groups that advocate restrictive policies; and pro-abortion ("pro-choice") groups that advocate a permissive policy allowing a woman to choose. Drawing on her research on pro-life and pro-choice activists, Luker (1985) wrote: "People who care about the issue of abortion care intensely, and the abortion debate is

marked by passionate heat . . ." (p. 26). That activists on both sides feel passionately comes as no surprise. It is less clear how strongly the larger public feels about the issue and whether strong feeling is equally distributed among proponents and opponents of legal abortion.

Many researchers have examined who supports and who opposes legal abortion. Yet attitudes vary in other important ways, most notably in the strength with which they are held. People who regard the issue as very important are probably more likely to take action than those who feel that the issue is of little or no importance (Zurcher and Snow 1981). If strength of feeling, for example, is only associated with the minority position, while the majority tends to be apathetic (Dahl 1956), this would have consequences for political struggles. Mansbridge (1986) described just this scenario: "The attempt to ban legal abortion has remained a live issue only because its advocates feel so passionately about it, while many opponents are ambivalent" (p. 34). Luker (1984) makes the same point: "The pro-life movement has been politically successful because it has been intensely committed to the goal of outlawing abortion during a period when the general public has been only weakly committed to supporting it" (p. 219). Despite these claims by social scientists, there has been little systematic research on the *strength* of attitudes toward the abortion issue.

Consistent with the claim that the anti-abortion minority wins political battles because it feels more strongly than those who

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are pro-choice, Schuman and Presser (1981) found that on three measures of attitude strength ("centrality," "intensity," and "committed action"), those opposed to legalized abortion felt much more strongly about the issue than those who favored it.¹ Yet, as in much of the literature on abortion, Schuman and Presser depict the debate as a simple dichotomy: "The term abortion evokes a set of issues that have divided the public in fiercely emotional ways. Some people oppose abortion under virtually any condition, while others believe that a woman should have the right to have an abortion whenever and for whatever reason she chooses" (p. 244). Although this statement is accurate as far as it goes, it leaves out the *majority* of the public who support legal abortion in some, but not all, circumstances (Granberg and Granberg 1980; Lamanna 1984).

To be sure, when forced to choose between a pro- and anti-abortion stance, the majority of the public is pro-abortion. However, many who choose "pro" appear to do so *not* because they feel passionately about the woman's right to choose, but rather because they have mixed feelings about abortion and do not want to prohibit legal abortion entirely (Scott 1987). If given the option, such respondents support abortion in some, but not in all, circumstances. Plausibly, these apparently pro-abortion, but actually "mixed," respondents feel less intensely about the abortion issue than those at either extreme.² If such mixed respondents are excluded, there may well remain a core of pro-choice advocates who feel extremely strongly about the right of choice, just as a hard core of pro-life advocates oppose abortion even when a pregnancy results from rape or incest.

Our initial purpose is to probe further the conventional wisdom that supporters of abortion feel less strongly and are less committed to social action than are pro-life supporters. Our first prediction is

1. Once people who support abortion in some but not all circumstances are separated out

from those who consistently support abortion on demand, then consistent pro-choice and consistent pro-life supporters will regard abortion as an important issue to about the same degree.

In addition, we will test three more predictions concerning the interaction of abortion stance and attitude strength by religion, race, and gender.

2. Anti-abortion respondents who are affiliated with a religious organization that opposes abortion, in particular the Catholic Church and fundamentalist Protestant denominations, will feel more strongly about the abortion issue than other respondents. The anti-abortion movement has been characterized as an essentially religious movement (Petchesky 1984), and studies of activists have indicated that strong condemnation of abortion stems from religious commitment and defense of traditional morality (Luker 1984; Clarke 1987).
3. Blacks will regard the abortion issue as less important than whites, because the abortion issue is a somewhat peripheral concern for blacks in comparison with racial inequalities (Schulder and Kennedy 1971).
4. Among pro-choice supporters, women will regard the abortion issue as more important than will men because it is women, both individually and collectively, who stand to lose most by abortion restrictions.

We present evidence testing each of these predictions and then, finally, we shift our focus from attitudes to *action* among supporters and opponents of legal abortion.

Our data are from national probability samples interviewed by the Survey Research Center (SRC) at the University of Michigan and by the General Social Survey (GSS) of the National Opinion Research Center (Davis and Smith 1972-87). Attitude strength is operationalized by measures of *importance* and *concern*, and we also use measures of self-reported *action*.

ABORTION STANCE AND THE IMPORTANCE OF THE ISSUE

The GSS poses a battery of seven standard abortion items, asking respondents whether they think it should be possible for a pregnant woman to obtain a legal abortion if there is a strong chance of serious defect in the baby; if she is married and does not want any more children; if the woman's own health is seriously endangered by the pregnancy; if the

¹ Other examples of measures of attitude strength on the abortion issue appear in Granberg 1981 and Granberg and Burlison 1983.

² In general, extremity of position and intensity are positively related (Schuman and Presser 1981, p. 233). There is also evidence that extreme proponents and opponents of abortion feel more strongly than those in between (Smith 1982).

family has a very low income and cannot afford any more children; if she becomes pregnant as a result of rape; if she is not married and does not want to marry the man; or if the woman wants it for any reason.

Respondents are considered "pro" if they support legal abortion in all seven circumstances, and "anti" if they oppose abortion in all circumstances or in all circumstances except danger to the mother's health. This exception is allowed because even the Catholic Church will accept abortion if there is direct conflict between the life of the fetus and the life of the mother. All remaining respondents are considered "mixed," excluding only those who did not respond to at least four items. The issue then is: what happens to the association between attitude direction and attitude strength when it is possible to focus on consistent pro- and anti-abortion positions?

Measures of attitude strength were included in the 1982 and 1984 GSS, immediately following these seven abortion items. The general importance measure used in the 1982 survey was: "How important is the abortion issue to you?" In 1984 a random half of the sample was asked this same importance measure, while the remaining half was asked "How concerned are you personally about the abortion issue? First we consider the relation of attitude importance to attitude direction using the combined 1982 and 1984 data, and then we report the results for the 1984 measure of concern.

Despite the separation out of a more extreme pro-abortion stance, the evidence in Table 1 does not support our prediction, but instead supports earlier findings that those

opposed to abortion are by far more likely to feel the issue is very important.³ Moreover, those who favor abortion in all circumstances and those with mixed views have remarkably similar importance scores. It is only the anti-abortion group that is distinctive in terms of the importance measures. (The attitude strength levels between mixed and pro-abortion groups do not differ significantly, whereas the anti-abortion group against all others yields a highly significant difference.)

Respondents were more likely ($p < .001$) to say that they were personally very concerned about abortion than they were to say that abortion is the most important issue (1984, data not shown). This is hardly surprising; many things can be of concern, whereas "most important" clearly implies a ranking of issues. However, essentially the same results hold true for this alternative measure of attitude strength—concern about abortion—as for the measure of importance: the pro-abortion and mixed groups do not differ in their level of concern, whereas the anti-abortion group is far more likely to feel "very concerned."

Religion, Race, and Gender

We also investigated the relation of attitude strength regarding abortion to three basic background variables: religion, race, and gender.

Religion. First, we predicted that opponents of abortion will feel particularly strongly if they are affiliated with a religious organiza-

Table 1. Importance of Abortion Issue by Stance on Legal Abortion

	Abortion Stance		
	Pro	Mixed	Anti
Importance			
One of most	11%	12%	39%
Important	44	46	36
Not very	32	31	12
Not at all	13	11	13
(Total number)	(812)	(1388)	(221)

Overall: $L^2 = 32.69$, d.f. = 2, $p < .001$

Anti vs. others: $L^2 = 31.15$, d.f. = 1, $p < .001$

Pro vs. mixed: $L^2 = 1.54$, d.f. = 1, n.s.

Note: The data combine GSS 1982 and 1984, but the same conclusions are reached for the separate years as for the combined sample. The likelihood-ratio tests treat Importance as linear.

³ Even with the most extreme criterion of pro-abortion stance possible with these measures, 34 percent are pro-abortion, with only 9 percent opposing abortion. If it were possible to further subdivide the pro-abortion group so that the proportions on the two sides were more equal, then the two groups might conceivably be similar in attitude strength. However, a more stringent criterion is possible for *both* sides. For example, Granberg (1981) reports that 73 percent of members of the National Right to Life Committee favor making abortion available to a woman whose life is endangered by the continuation of the pregnancy, and 46 percent of the National Abortion Rights Action League oppose legal abortion if the sex of the child is the issue (this item received less support than abortion for "whatever reason"). Thus the imbalance of the two sides appears to be inherent in the distribution of current opinions about the abortion issue.

Table 2. Importance of Abortion Issue by Stance on Legal Abortion and Religious Affiliation

Abortion	Catholics			Fundamentalists			Other Protestants		
	Pro	Mixed	Anti	Pro	Mixed	Anti	Pro	Mixed	Anti
Importance									
One of most	13%	14%	49%	7%	14%	36%	11%	10%	34%
Important	45	48	39	43	48	32	46	46	44
Not very	32	27	3	36	28	16	31	36	12
Not at all	10	11	9	13	11	17	12	8	10
(Total number)	(164)	(336)	(69)	(127)	(425)	(89)	(253)	(420)	(41)

For Anti-abortion:

Importance by religious affiliation: $L^2 = 6.86$, d.f. = 2, $p < .05$

Catholics vs. fundamentalists and other Protestants: $L^2 = 6.23$, d.f. = 1, $p < .05$

Fundamentalists vs. other Protestants: $L^2 = 0.63$, d.f. = 1, n.s.

Note: The likelihood-ratio tests treat Importance as linear.

tion that takes an explicit anti-abortion stance. The Catholic Church is a major organizational base of the anti-abortion movement (Luker 1984; Granberg and Granberg 1985); a second possible organizational base for opponents of abortion is fundamentalism, with its close link to the new religious right (Shupe and Stacey 1983). At the same time, we also expected the difference in attitude strength between anti- and pro-abortion respondents to hold up within such broad religious groupings.⁴

Table 2 shows that most Catholics who oppose abortion do see the issue as important—49 percent regard the abortion issue as one of the most important, and a further 39 percent regard it as an important issue. These anti-abortion Catholics show significantly greater attitude strength than do anti-abortion fundamentalists or other Protestants combined. However, fundamentalist opponents of abortion do not differ significantly in attitude strength from nonfundamentalist other Protestant opponents. Surprisingly, the trend among protestants is for fundamentalists to feel *less* strongly than nonfundamentalists, with a substantial minority of anti-abortion fundamentalists (33 percent) regarding the abortion

issue as not very or not at all important. Thus, although our earlier results—that opponents of abortion feel more strongly than either pro-abortion or mixed respondents—hold for all three groups in Table 2, there is a puzzling lack of attitude strength among fundamentalist opponents of abortion. We explore this unexpected finding further below by testing our next prediction.

Race. The relative lack of attitude strength among fundamentalist opponents of abortion may reflect a race difference in attitude strength on the abortion issue, with black fundamentalists regarding the abortion issue as less important than whites. We predicted, more generally, that the abortion issue may be regarded as relatively unimportant to blacks because their priorities are on other problems.

The 1982 GSS includes an over-sampling of blacks, allowing us to examine relations among race, abortion stance, and attitude strength. As Table 3 shows, blacks are more opposed to abortion than are whites: almost twice as many blacks (15 percent) than whites (8 percent) are against abortion in all circumstances. Yet among those who adopt an anti-abortion stance, blacks are *less* likely than whites to regard the issue as one of the most important. Moreover, among whites, opponents of abortion feel the issue is much more important than either those who adopt a pro-choice or a moderate stance, but black opponents of abortion are *less* likely to regard the issue as important than are blacks who favor abortion in some or all circumstances. The interaction between race and abortion stance on importance is highly significant.⁵

⁴ There have been various schemes suggested for classifying Protestant denominations (Glock and Stark 1965; Hertel and Hughes 1987). Here we follow Smith's (1986) division of the General Social Survey's Protestant categories into fundamentalist, moderate, and liberal denominations. We combined moderate and liberal denominations because the two groups showed no significant difference on measures of attitude strength and abortion stance. Those reporting no religion, never attending church, or non-Christian religions are omitted because there are very few anti-abortion respondents among them.

⁵ Since education is strongly related to abortion stance (Granberg and Granberg 1980; Legge 1983) and since blacks are under-represented in higher

Table 3. The Importance of the Abortion Issue for Blacks and Whites by Stance on Legal Abortion

Abortion	Whites			Blacks		
	Pro	Mixed	Anti	Pro	Mixed	Anti
Importance						
One of most	11%	12%	43%	8%	11%	12%
Important	44	47	37	46	41	30
Not very	32	31	9	35	29	25
Not at all	13	10	11	12	19	33
(Total number)	(741)	(1190)	(180)	(118)	(383)	(91)
Total %	35	56	8	20	65	15
Overall:	$L^2 = 42.49$, d.f. = 2, $p < .001$			$L^2 = 3.90$, d.f. = 2, n.s.		
Anti vs. others:	$L^2 = 41.42$, d.f. = 1, $p < .001$			$L^2 = 3.72$, d.f. = 1, $p < .10$		
Pro vs. mixed:	$L^2 = 1.07$, d.f. = 1, n.s.			$L^2 = 0.18$, d.f. = 1, n.s.		

3-way interaction: $L^2 = 28.31$, d.f. = 2, $p < .001$

Note: The likelihood-ratio tests treat Importance as linear.

Many more blacks than whites belong to a fundamentalist church (62 percent to 24 percent). When fundamentalists are separated by race, *white* fundamentalist opponents of abortion regard the abortion issue as much more important than the pro-choice or mixed groups ($p < .01$), just as we found for the national sample as a whole. The trend, among white opponents, is for fundamentalists to feel more strongly than nonfundamentalists, although the difference is not significant. However, among black fundamentalists there is no significant relation between abortion stance and importance.

Our data do not allow us to explore *why* black opponents of legal abortion regard the abortion issue as less important than whites. It may, however, indicate not only that blacks place their priorities elsewhere, but that perceptions of legal abortion have undergone a marked change in the black community so that "earlier cries that family planning was black genocide have been drowned by cries to maintain access to contraceptive and abortion services" (Rodman, Sarvis, and Bonar 1987, p. 153). In our data, there is not much evidence of strong feeling among black supporters of legal abortion, but there is also no indication of strong feeling among opponents.

Gender. The anti-abortion movement has remained an essentially religious movement, but the pro-abortion movement has been

closely identified with the struggle for women's rights. We predicted that among those who favor legal abortion, women will regard the issue as more important than men, even though many men (indeed, slightly more men than women) support legal abortion. Women are more affected by child rearing both biologically and socially, and this is why, among pro-abortion supporters, women may feel more strongly about the right to abortion. There is, however, less reason to predict any gender difference in importance among opponents of abortion, for there the focus of concern is on the fetus, not the woman.⁶

Table 4 shows that among pro-choice supporters, women are significantly more likely to view abortion as important than men. Among opponents of abortion there is a nonsignificant trend in the same direction, whereas among those holding a mixed stance there is no sign of a gender difference. (The three-way interaction of gender, importance, and abortion stance is significant.)

We tested this gender effect further by using a different importance measure included in the monthly SRC survey in August 1979. Unlike the GSS importance item, which is rather vague in wording, the SRC item

education, we used a stepwise, backward, loglinear procedure to determine whether the interaction of race, importance, and abortion stance remains significant when education and sex are controlled. The interaction term remains highly significant ($L^2 = 26.52$, d.f. = 1, $p < .001$).

⁶ Even among pro-life supporters, women may feel more strongly than men. Luker (1984) characterizes the abortion debate as fundamentally a struggle between women and about the meaning of women's lives. She suggests that some pro-life supporters feel passionately about the issue because their own status as exclusively housewife and mother is increasingly under assault and that this assault is symbolically represented by the destruction of fetal life (p. 217).

Table 4. Gender Differences in Importance by Abortion Stance

Abortion	Pro		Mixed		Anti	
	Men	Women	Men	Women	Men	Women
Importance						
One of most	7%	15%	13%	11%	28%	45%
Important	39	48	41	50	45	31
Not very	37	28	35	28	12	12
Not at all	17	10	11	11	16	12
(Total number)	(356)	(456)	(598)	(790)	(76)	(145)
$L^2 = 17.39$, d.f. = 1, $p < .001$ $L^2 = 0.72$, d.f. = 1, n.s. $L^2 = 2.79$, d.f. = 1, $p < .10$ 3-way interaction: $L^2 = 8.33$, d.f. = 2, $p < .02$						

Note: The likelihood-ratio tests treat Importance as linear.

includes a specific behavioral intention: "How important is a candidate's position on the general issue of abortion when you decide how to vote in a Congressional election?" The measure of abortion stance is a single pro-con question: "Do you think it should be possible for a pregnant woman to obtain a legal abortion if she is married and does not want any more children?" As with the more general measure of importance reported above, women who support legal abortion are significantly more likely than men to view abortion as very important, but there is no significant gender difference among those who oppose legal abortion. The interaction of gender and abortion response on importance is again significant ($p < .05$). This finding is particularly interesting because men have consistently shown greater support than women in the GSS data on legal abortion for a married woman who does not want any more children.⁷ Yet, clearly, the women who do favor abortion are appreciably more likely than men to regard the issue as one of central importance.⁸

⁷ In the GSS surveys between 1972 and 1985, women have always given less support to this item than have men. The average percentage difference between the sexes in approval, over all years, is 4.6 percent. In the August 1979 SRC data, 64 percent of men and 55 percent of women favor legal abortion.

⁸ The same importance measure was included in March and July 1979. In July a more general abortion item was used asking, "Do you feel a woman should be allowed to have an abortion in the early months of pregnancy if she wants one?" For both months, women who favor abortion are significantly more likely than men to regard the issue as very important, whereas there is no significant gender difference among opponents. The combined data for the three months also yields

SOCIAL ACTION FOR THE ABORTION CAUSE

People who regard the abortion issue as important are probably more likely than others to take some action for the pro- or anti-abortion cause. In a survey, however, it is not easy to assess the importance of an issue for respondents without first making the issue salient by asking questions about it. Open questions are one way of attempting to obtain spontaneous expressions of concern with relatively little influence from the question procedure itself. An example of such an open question is: "What do you think is the most important problem facing this country today?" When this question was asked to a random half of the SRC sample in October 1986, however, *no* respondents mentioned the abortion issue. The remaining random half was given a closed version of the question that specifically mentioned abortion as an alternative, along with three other problems rarely mentioned to the open question, but even with this version, only 8 percent of the sample selected abortion as the most important problem.⁹ Clearly, abortion is

a significant three-way interaction: $L^2 = 5.9$, d.f. = 1, $p < .05$.

⁹ The closed question reads: "Which of the following do you think is the most important problem facing this country today—the energy shortage, the quality of public schools, legalized abortion, or pollution—or if you prefer, you may name a different problem as the most important. The quality of public schools was chosen by 32 percent, 14 percent chose pollution, 6 percent the energy shortage, and 39 percent named some other problem. For the open version of the question, unemployment, economic problems, and the threat of nuclear war are the issues of primary concern in recent years.

not ranked as the "most important problem facing the country" by very many people.

It is also the case that only a small minority of the public are *actively* involved in the abortion issue on either side. Eleven percent of a national sample answered "yes" when asked whether they had ever written a letter or given money for their side of the abortion cause (SRC, July 1979), but pro-life supporters were much more likely to report having taken some action than pro-choice supporters (19 percent to 7 percent). A less direct question in 1985 yielded a much smaller proportion of activists. The question asked: "Have you ever worked for some important change in the way things are done in your state or in the country as a whole—say, by writing letters, donating money or *any other action*?" Positive responses were then probed: "What change did you want to bring about?" and "What did you personally do?"¹⁰ Only 2.2 percent of a national sample of 1,410 respondents reported abortion-related activity, but of these 30 cases, 25 are concerned with the pro-life cause (18 women and 7 men) and 5 with the pro-choice cause—a 5 to 1 ratio. The responses make clear that the dominance of pro-life activity is not due merely to greater pro-life activity in the past, but that it also reflects present activism.

Even with so few cases, there are some distinguishing characteristics of these self-reported pro-life activists. All 25 pro-life activists are regular church-goers, and 96 percent attend church weekly, compared to only 30 percent of the total sample. It is not just that these respondents are devout; religion shapes their responses and attitudes on a wide range of issues. For example, when asked to name "one or two people who come to mind as having been especially important people in the nation or the world over the past 50 years?" only 7 percent of the total sample choose a religious figure, whereas 40 percent of pro-life activists mention religious leaders such as Billy Graham, Jerry Falwell, or the pope. Studies of activists indicate that Catholics dominate the pro-life movement (Luker 1984; Granberg and Granberg 1985). This national sample, however, suggests that

evangelical Protestantism may also be an important force behind pro-life activity.¹¹

Scholars claim that pro-life supporters are motivated by social traditionalism and concern about the perceived loss of moral authority in modern society (Himmelstein 1983; Clarke 1987). Such claims tend to be derived from the comments of a small number of pro-life activists. In national surveys, opposition to abortion is correlated with closed questions dealing with traditional positions on matters of personal morality; e.g., beliefs about premarital sex, contraception, sex education and pornography (Granberg and Granberg 1985). There is less evidence, however, that moral concerns dominate pro-life respondents' view of the world when this is not raised explicitly by the question.

In the 1985 SRC survey, preceding the social action items, respondents were asked: "All things considered, do you think the world is a better or a worse place today than it was when you were a child?" Among the general public, 57 percent felt that the world is a better place. All five pro-choice activists agreed that the world is better, citing educational improvements, technological advances, and greater tolerance. Yet among the 25 active pro-life supporters, 19 (76 percent) felt the world is a *worse* place. The overwhelming theme of the open-ended responses of pro-life activists concerns moral decline. A man who pickets abortion clinics and has written letters and given money for the pro-life cause said, "The moral values of the world have just declined so much. Abortion for one thing—I am totally against that. Divorce is rampant, it's too easy now. The promiscuity of teenagers and adults. . .". A woman who has been on a pro-life march and given out leaflets said, "I think people's moral values are worse as far as promiscuity, drug use, and decay of the family unit. Promiscuity is resulting in venereal diseases and more abortions. People are reaping what they are sowing." Another woman began her response by comparing the world today to Sodom and Gomorrah. Jeremiah would feel at home among such prophets of doom.

CONCLUSIONS

Our initial prediction about the relation of attitude strength and abortion stance was

¹⁰ Asked in a national telephone survey conducted by SRC in 1985 as part of a study on the intersection of personal and national history.

¹¹ Unfortunately, denominational affiliation is not available.

disconfirmed. Even when those holding mixed views about abortion are excluded, consistent supporters of legalized abortion regularly show less concern and ascribe less importance to the issue than do those who oppose it. This finding holds when religion and gender are controlled, except for black Protestant fundamentalists.

Blacks are generally less likely than whites to regard abortion as important. This is true, despite the fact that blacks are more likely to oppose abortion in all circumstances and opponents of abortion usually feel more strongly about the issue, and despite the fact that so many blacks belong to fundamentalist denominations, which are also associated with opposition to abortion. A plausible explanation is that for the black community, issues involving racial inequalities make abortion seem a somewhat marginal concern.

Among supporters of abortion, women feel more strongly about it than do men. Thus, although men are as likely or more likely to be pro-choice as women, among supporters of legal abortion women are appreciably more likely to regard the issue as important when it comes to voting in a congressional election or taking some social action.

It is usual to view the greater importance given to the abortion issue by opponents as a source of strength in the political battle over legal abortion, and the fervor of pro-life supporters has undoubtedly helped to keep the abortion debate alive. At the same time, the very strength of pro-life opinion may be weakness in the struggle for public opinion, since the intensity of those opposed to abortion may alienate the majority who are less passionate about the issue. If instead of "attitude strength" we refer to "attitude extremity," then it is easy to see how the more moderate members of the public may feel more akin to those who favor choice than to the more passionate opponents of abortion.

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COMMENTS

INEQUALITY AND VIOLENCE: ISSUES OF THEORY AND MEASUREMENT IN MULLER*

(Comment on Muller, *ASR*, February 1988)

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Edward Muller (1985) recently contributed to the debate concerning the importance of deprivations and facilitating conditions in accounting for collective violence. While calling attention to the impact of lagged deprivations on social unrest, Muller left organizational capacity and mobilization out of his operationalization and his regression model's specification. Questions have been raised about Muller's modeling procedure, in particular his lag structure, data transformations, and the influence of outliers (Weede 1986; Dietz, Frey, and Kalof 1987). No one has provided a critique of his theory and measurement. We will show the problematic nature of Muller's measures and the limitations of his theory. Given that the same measures have been used by other researchers (Weede 1981; Park 1986), a careful examination of the dataset is basic to progress in this area. Cross-national violence research has tended to treat the *World Handbook's* deaths from domestic violence data as if it were error free.

Muller (1985) found that income inequality, in particular the share of income going to the top 20 percent of all households, has a strong positive effect on change in the level of mass political violence. He also found that mass political violence is a nonlinear function of an index based on Freedom House's scale of "civil and political rights"—with violence highest at the intermediate levels of the rights index. Economic development, sociocultural heterogeneity, and regime sanctions were found to be unrelated to violence. The results are interpreted within a state-versus-political-

opposition framework, as Muller views the state as an independent and autonomous actor with control over the sole determinant of political grievances— income inequality. He notes the Brazilian case as one in which the state generates grievances by seeking to raise the level of capital accumulation, while using its repressive capacity to control opposition groups (p. 47). The state has the capacity to dampen organized violence after its onset through the strategic use of its repressive agencies.

The logical structure of Muller's model requires that income inequality and, thus, grievance formation come prior to organization.¹ The rate at which popular organizations form in response to grievances is seen as a constant across all nations, regardless of the level of development, literacy, or urbanization. It is possible, in Muller's model, that the rate of organization formation is a function of the formal structure of the political system (i.e., the frequency and quality of elections as judged by Freedom House), but this is left out of the empirical side of the paper. Violence, then, is assumed to be the result of those from below seeking to redress grievances. The use of systematic or administrative state terror, so common in the peripheral economies (Chomsky and Herman 1979), is not incorporated explicitly into the analysis.

Muller's model assumes that all grievances are income-based, that political violence is caused by conflict between the poor and the rich, rather than between the repressors (e.g., state managers and/or foreign powers) and the repressed. It also assumes that economic fluctuations, which are a major element in many political-violence models (Chirot and Ragin 1975; Lipset 1971, pp. 82–86) are irrelevant. The model is grievance-determined rather than goal-determined. Lastly, the model assumes that organization is inversely related to repression, rather than accelerated in certain instances by repression.

In terms of Muller's measures and in view of his discussion of the model (p. 48) where he presents the "open," "closed," and "intermediate repressiveness" cases, we construct the following table.²

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Useful comments were made on earlier drafts by David Zaret, William Erskine, and two anonymous *ASR* reviewers. The data used in this paper were made available, in part, by ICPSR. The data for the *World Handbook of Political and Social Indicators III, 1948–1982*, were originally collected by Charles Lewis Taylor.

¹ Muller writes, "The political-process model also assumes that discontent (of some kind—relative deprivation or otherwise) is relevant as a necessary condition for the formation of dissident groups" (p. 48). The only measure of "discontent" Muller provides is the share of income going to the top quintile.

² Muller splits societies on the basis of whether

Independent Variables	Dependent Variable		
	Political Repression	Political Violence	Muller's Case
Income Inequality			
High	High	Low	Closed
High	Low	High	Intermediate
Low	High	Low	—
Low	Low	Low	Open

In the table, the curvilinear result is due to three theory-confirming theoretical cases. Miller's greatest interest is with those cases with intermediate values on Freedom House's scale of rights that also had a very large number of deaths for their population size.³

Muller's dependent variable is taken from Taylor and Jodice's "deaths due to political violence" (1983), and it has a badly skewed distribution. The distribution is compressed near zero with five very large values" Lebanon, South Vietnam, Uganda, Cyprus, and Ethiopia. Given a nonnormal dependent variable, at minimum an atheoretical search would be needed for a reparameterization to have model functions whose behavior is close to linear.⁴ However, we are not entirely ignorant of the social processes that produced the variation in the dependent variable. We should use this *historical* knowledge before trying to model the dependent variable as if we were completely naive.

Consider the probable sources of the distribution of the dependent variable. Contagion processes are well known in the study of violent phenomena (Spilerman 1970) and justify speculation about the

need for a log transformation. However, other processes could lead to considerable measurement-error bias. First, not only does violence lead to more violence, but journalists lead to more violence. Consequently, the data-collection network changes in quality over time. Second, news accounts of deaths from domestic violence are frequently part of the political process and are used towards political ends; hence, accounts of violence can receive more or less media coverage.⁵ Third, there are a very large number of zero values in non-Western societies where there is little Western interest and the press is less developed. The reverse is also the case, as Taylor and Hudson note that U.S. violence is probably overreported (Taylor and Hudson 1972). The *Work Handbook* deaths from domestic violence dataset is the result of the complex social process of media reportage, a fact that Taylor and his coauthors emphasize.⁶

⁵ Oddly enough, Muller makes no reference to the sociological literature that questions the use of newspaper counts of riots, atrocities, and other inherently contentious *political* acts (Danzger 1975; Snyder and Kelly 1977).

It is apparent that sources are accorded differential credibility by organization. Following the downfall of the American-backed regime in Cambodia, no Western or "independent" sources on violence were available. The only sources were refugee reports, and these were frequently second or third hand. On April 12, 1976, about one year after the fall of Phnom Penh, *Time* ran a story that 500,000 Cambodians had perished under the Royal Government of National Union Khmer (GRUNK). While the *New York Times* ran the story the same day, Amnesty International's *Reports* in 1974/5, 1975/6, and 1977 carefully described the events in Kampuchea. One *Report* issued about the same time as the *Time* article states that the accounts seem to be "based on belief rather than evidence" and that "few refugees seem to have actually witnessed executions" (1976, p. 137).

⁶ The primary source for the "deaths" data in the *New York Times Index*, a much abbreviated summary of that newspaper. To evaluate the performance of the *World Handbook's* deaths data, we examined two cases in detail: the collapse of the U.S.-backed regime in Cambodia and the Indonesian invasion of the Portuguese colony of East Timor. In the former case, the *World Handbook* reports only 1,446 deaths for 1975 and no subsequent deaths under Pol Pot. In the latter case, no deaths are reported for Portuguese or Indonesians. Given that there is no separate entry for East Timor, the incidence of violence does not exist within the dataset. We agree with Charles Taylor in the most recent edition of the *Handbook*: "The method of calculating deaths from political violence seriously understated the magnitude of the loss in some of the major conflicts in the 1970's"

the state can break down opposition organizational structures (see pp. 48, 56).

³ If we view violence as episodic in nature rather than stable, then the crucial case is one with high levels of inequality and repression while political violence is kept to a minimum. Muller fails to provide theoretical discussion or historical examination (if such a case exists) or any such cases. Such instances would show whether repression was able to keep a lid on violence and, within the context of his theory, form the necessary parabolic function. The society would move between periods of bureaucratic oppression (at the end of the parabola) to ones of organized collective violence (at the middle of the function). Movement at the other end of the parabola would be precluded because the society is "open" enough to meet citizen demands.

⁴ This is the goal of such rescaling techniques known as Box-Cox regressions (Box and Cox 1964; Zarembka 1974; Carroll 1980). Judge, Griffiths, Hill, and Lee (1980) note that the major use of Box-Cox regression in the econometrics literature is the ad hoc effort to model functional form.

Although measurement error clearly plays a major role in generating the numbers that form the dependent variable, there are also more systematic sources of variance. Omitted variable bias is a major source. First, invasions clearly cause a large share of the deaths for a number of nations. Lebanon was invaded by Syria and Israel during the time covered by the paper; the Vietnams were invaded by the United States, and Czechoslovakia was invaded by the Soviet Union. There are only a few cases where many deaths were caused by foreign invasion or intervention. Taiwan's data for the 1950s includes 4,672 troops killed in military action against the People's Republic of China. The story was reported in the *Hsinhua News*, recorded by the New Delhi publication, *The Asian Recorder*, and entered as "deaths from domestic violence" by Taylor and Hudson's coders. Second, there are no controls for deaths due to the systematic use of state terror. Consequently, there is the danger that deaths due to the administrative use of terror will be counted as deaths due to pressure from below, e.g., the enormous outlier of Idi Amin's Uganda.

Taylor and Jodice state that they do not control for these sources of variation and that the user should model such sources of variance.⁷ The use of the log transform by Muller might correct for the contagion process, but not the omitted variables and measurement-error problems.⁸

Five sets of equations form the empirical side of Muller's article. Four include an income-distribution variable that has a large number of missing cases. The first set of equations concerns the impact of regime repression, measured by the Freedom House scale, on logged deaths per million populations (1973–1977). We replicated Muller's equations for the full dataset of 133 cases he cited.⁹

(1985, magnetic tape). Please write the authors for a complete review of these cases.

⁷ Taylor and Jodice (1983) indicated that the category of deaths from political violence includes nationals who are casualties of foreign interventions in the country and excludes those who are executed. They also pointed out that death data are subjected to coding problems (e.g., duplicate or cumulative reporting and inconsistencies between the periods covered). Taylor and Hudson discuss at length the accuracy of the *New York Times* as a source in the second edition of the *World Handbook* and note unevenness in its coverage (Taylor and Hudson, pp. 417–23).

⁸ The income-inequality variable is incorrectly measured. The income data do not refer to the same population: the data mix household- and individual-level data; the concept of *income* is not clearly defined; the data refer to different years within the same period studied; and measuring techniques vary over the nations in the sample.

⁹ We note that Muller's reference (p. 50)

We then computed studentized residuals; it is apparent that an "invasion" variable should be included.¹⁰ The following nations had studentized residuals greater than 2.0: Cyprus, Ethiopia, Cambodia, Lebanon, South Vietnam, and Uganda. All of the above outliers were positive, meaning that the Freedom House score fails to account for a large share of violence.

The rationale behind this set of equations, that repression is a measure of opposition organization, is problematic: More likely, repressive forms of rule may coincide with varying levels of organization, contingent on such factors as urbanization, literacy, technological development, and Muller's prime mover (inequality-based grievances). Muller makes the argument common in the literature on totalitarianism that the repressive state can crush all forms of opposition organization (Lefort 1986), but this is precisely what has to be proven.

The first set of equations reveals a collection of cases forming the reestimated parabola. At the intermediate levels of the Freedom House "rights index" and with large numbers of deaths, we find

referred to the Taylor-Jodice tables of the Freedom House data. Taylor and Jodice report data for 1973–1979, not 1973–1977 as Muller stated. Muller used only 51 cases in his equations. Using the Kalmagarov-Smirnov statistic to provide a univariate analysis of the dependent variable, we can reject the normality assumption with a great deal of confidence (D-Max statistic = .2604; significance level of .01) (Koerts and Abrahamse 1969, pp. 113–14). The bivariate results demonstrate the volatility of his estimates. The results display a very low degree of fit between the estimated equation and the data, with an R^2 term equal to .06 in the full equation. Given that the rights index is purported to be a measure of repression and that a large share of the domestic violence deaths are the result of state repressive action, the degree of fit is low. The signs of the equation are in the same direction as Muller's and are significant. However, the coefficient vector is volatile and in the completely specified equation, identical to his Table 3, the signs change and become significant in the opposite direction. In fact, in our replication, only repression and repression squared are significant at the .05 level—the signs in the opposite direction of Muller's. Complete regression tables are available from the authors.

¹⁰ One could enter a dummy variable for invasions or repressive states and interpret the studentized residual statistics as t -statistics on case dummies, but a more satisfactory measure would be one of the devastation caused by invasion. This takes us back to sorting out deaths by their cause and assessing the degree of violence caused by the invasion. This is the fundamental problem of heterogeneous data.

Table 1. Political Violence Regression Equations, 1968–1972 Dependent Variable: lnDPM70

	Independent Variables							N	R ²
	lnDPM65	lnSPM70	lnSPM65	U2065	lnECPC65	ELF60	PS60		
(1)	5.93***	2.12	-27.98**	-.006	-6.96**	-.30	.0078***	42	.29
(2)	5.68***	2.43	-28.38**	-.007	-5.65**	—	.0049***	42	.26
(3)	3.45	13.79	-6.62	-.008**	-7.72***	.02	—	44	.11
(4)	3.50	—	-3.07	-.009**	-7.62***	.03	—	44	.12
(5)	3.27	-5.39	—	-.010***	-7.38***	.03	—	44	.106

Notes: Unstandardized coefficients are reported in all equations. lnDPM65 and lnDPM70 are the natural logarithms of the one plus deaths per million from political violence. Following Muller, we aggregated over the periods, 1963–1967 and 1968–1972. lnSPM65 and lnSPM70 are the natural logarithms of one plus sanctions per million population. Following Muller, we aggregated over 1963–67 and 1968–1972. U2065 is the income share going to the top 20 percent of households (income recipients and economically active population, etc. . . .) for the period 1963–1968. lnECPC65 is the natural logarithm of energy consumption per capita for 1965. ELF60 is the index of ethnolinguistic fractionalization. PS60 is an index of the potential political separatism. *N* is the number of countries studied. *R*² term is adjusted for degrees of freedom.

Data source: The following nations' income data is from Jain (1975): Europe—Denmark (1966), Finland (1962), France (1962), W. Germany (1964), the Netherlands (1967), Norway (1963), Spain (1964–65), Sweden (1963), United Kingdom (1964), Yugoslavia (1968); North America—Canada (1965), United States (1966); Central America—Chile (1968), Columbia (1964), El Salvador (1965–67), Honduras (1967–68), Mexico (1963), Puerto Rico (1963), Uruguay (1967), Venezuela (1962); Africa—Egypt (1964–1965), South Africa (1965), Tanzania (1967); Asia—India (1964–65), Japan (1965), S. Korea (1966), Malaysia (1967–68), Pakistan (1966–67), Philippines (1965), Sri Lanka (1963), Taiwan (1964), Thailand (1962), Turkey (1968); Oceania—Australia (1967–68), New Zealand (1967–68); centrally planned economies—Bulgaria (1962), Czechoslovakia (1964), E. Germany (1967), Hungary (1967), Poland (1964). The following nations' data are taken from Paukert (1973): Bolivia (1968), Morocco (1965), Sierra Leone (1968). Ghana's income data is from Roberti (1974).

** Significant at the .10 level.

*** Significant at the .05 level.

Lebanon and South Vietnam. At the far end are states judged deficient on civil and political rights. Typically, these are centrally planned economies with few or no deaths from domestic violence.¹¹ Muller did not ask whether the low violence rate of nations east of the Elbe is caused by low levels of "discontent" concerning the income distribution or "repression" resulting from the poor quality and infrequent elections. For Muller, grievances about income distribution are a "necessary precondition" for collective action.

The coding procedure used by Gastil in generating the Freedom House scale is apparent from *Freedom in the World* and *Freedom at Issue*. American client states are coded as "partly free" regardless of the amount of terror produced by their regimes. Thus, El Salvador and Guatemala have mean scores of 2.85 and 3.20 respectively,

whereas Yugoslavia and Hungary have mean scores of 5.85 (on a scale whose maximum "not free" value is 7.0).

The major missing link in the analysis is any measure of opposition organization. Gastil's measure of regime repressiveness is largely an effort to code the incidence of democratic forms. It is *not* obvious that the absence of multiparty elections is the same as repression. Democratic content, the actual ability of people to influence decisions that have an effect on their lives, is left unexamined. Gastil's coding equates the private sector and the market with freedom; no credit is given for efforts to democratize industrial or financial bureaucracies. This is how the United States gained a perfect 1.0 score and Yugoslavia 5.85. The Freedom House score appears to be more of a "business climate rating" than a measure of freedom.

Muller did not estimate the 1968–1972 wave of his panel model, so Table 1 presents our estimates using his operationalization, specification, and model-building strategy. In the full equation (1.1), the lagged effect of government coercion is significant only at a .10 level. Weak effects also exist for energy consumption and ethnicity. In this equation, income inequality has an insignificant effect and the sign is the opposite of that predicted by Muller. Potential separatism is estimated to have strong significant positive effect on political violence. In this equation, there are two unexpected findings: the direction of the signs for

¹¹ As an alternative to the rights index, we sorted the nations into three groups: affluent Western societies (greater than \$1000 U.S. GNP per capita in 1960), centrally planned economies, and the rest of the world. A simple ANOVA analysis reveals that the differences in means for regime-repressiveness scores are statistically significant at .0001 ($F=78.2$). The differences in the logged death rate from political violence among these three types of states are significant at .002 level ($F=6.4$). The differences in Gini coefficient are significant at .0004 level ($F=9.0$).

ethnolinguistic fractionalization and income inequality. The R^2 term is relatively low.

In the remaining four equations, we follow Muller's strategy of deleting "collinear" variables by dropping one or another of the sanctions variables and one or another of the fractionalization variables. Equation 2 shows that only potential separatism is significant at the .05 level. When the separatism variable is deleted from equation 3, the sample size increases by two (Honduras and Sierra Leone). In this equation, economic development is significant at the .05 level. Note that ethnolinguistic fractionalization is not statistically significant in the remaining equations. Income inequality has a significant negative effect only at the .10 level. During this period, political violence is not "a positively accelerated function of the prior level of income inequality" (p. 59). The simultaneous and lagged effects of governmental acts of coercion are not statistically significant when variable deletion permits the addition of two additional cases to the analysis. In equation 3, simultaneous and lagged values of governmental acts of coercion are highly correlated ($r = .86$), and we drop first simultaneous and then lagged values. Equations 4 and 5 show that the government-coercion variables are not significant. Income inequality, in the final three equations, gradually rises to be statistically significant at the .05 level. The sign on this variable is the opposite of that predicted by Muller's model.

CONCLUSION

Muller's findings are tied to a certain case base. A slight change in the composition of the cases or a slight change in the years studied is enough to radically alter the results. The most important causes of this instability are a dependent variable of a heterogeneous nature and very spotty data on income inequality. Clearly, the Taylor-Jodice "deaths from political violence" variable aggregates several distinct sources of violence: active rebellion from the oppressed; active repression by the oppressors; intervention by external powers; and societal interethnic violence. Political violence, rather than being a constant in the history of a nation, has an episodic character, and this is reflected in the Taylor-Jodice data. Because the only effort to deal with nonnormality in the distribution of the dependent variable was logging and averaging the data, a few extreme values, due to invasions, interethnic violence, or separatism, strongly influence the regression estimates.

In a situation where the gap between theory and data is vast, a cross-national study requires more and better data. Muller's conjecture about the relationship between democracy, inequality, and political violence is interesting, but on the measurement level it fails to capture the subtlety of these concepts.

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INEQUALITY, REPRESSION, AND VIOLENCE: ISSUES OF THEORY AND RESEARCH DESIGN*

(Reply to Hartman and Hsiao, *ASR*, this issue)

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Hartman and Hsiao: (1) argue that my theory of the relationship between inequality, repression, and violence is flawed; (2) assert that my measures of concepts lack reliability and/or validity; and (3) report results that the effect of income inequality on political violence is not robust. Their extensive critique raises serious issues of theory, measurement, and model-specification and testing procedures.

THEORY

A principal limitation of my explanatory model, in Hartman and Hsiao's view, is that organizational capacity and mobilization are omitted. They also claim that the rate of organization formation is a constant across all nations in my model, and they

criticize it for assuming that the organization of opposition is inversely related to repression. Each of these statements is contradictory. If organizational capacity and mobilization were omitted from the theoretical discussion, then how could it be assumed either that organization formation is a constant or that it varies inversely with repression? And if organization formation were understood to be a constant, then how could it be assumed to vary inversely with repression?

The model I proposed does take organizational capacity and mobilization into account. It is based on the explicit assumption that inequality-based discontent is not mobilized at a constant rate. Instead, I postulate that it likely occurs only when the population affected by inequality is large. This is the rationale for the hypothesis that political violence will vary as a curvilinear (positively accelerated) rather than a linear function of income inequality. Also, the nonlinear regime-repressiveness hypothesis implicitly assumes that the rate of formation of organizations opposed to the political system will be highest at intermediate values of regime repressiveness, although the overall rate of organization formation can be expected to vary inversely with repressiveness.

Using the format of a fourfold table, Hartman and Hsiao claim that my model entails the following predictions: (1) if income inequality is low, then political violence will be low, regardless of the level of political repression; (2) given a high level of income inequality, (a) political violence will be low if political repression is high, but (b) political violence will be high if political repression is low. A high rate of political violence, according to this version of my model, results from a multiplicative interaction between the extent to which inequality is high and repression is low.

This is not the model I proposed. It differs from Hartman and Hsiao's misrepresentation in two important respects: first, given low income inequality, it stipulates that if the structure of the regime is semirepressive, the likelihood of political violence will be relatively high; second, given high income inequality, political violence will be relatively high, and it will be very high if the regime is semi-repressive. By dichotomizing the political-repression concept, Hartman and Hsiao misunderstand the essential point that political violence is hypothesized to vary as an inverted U of regime repressiveness.¹ Any statement of this hypothesis

¹ Hartman and Hsiao seem to be confused about the form of my regime-repressiveness hypothesis. There is a contradiction between their representation of it as monotonic (in interaction with income inequality) in the fourfold table and their claim later in the text that I reported the relationship as a positively accelerated parabola. In fact, a careful reading of my paper will show that there is no statement or implication anywhere that the relation-

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in a tabular format would have to take into account at least three values of regime repressiveness: low, intermediate, and high.²

The contradictory assertions of Hartman and Hsiao about the role of organizational capacity and mobilization in my model could be ascribed to misunderstanding, but their explicit reformation of my additive model of curvilinear and nonlinear effects into a multiplicative interaction model that ignores the curvilinear and nonlinear effects is puzzling. Perhaps the reason is to be found in their exaggerated emphasis on the role of grievances in my model, which they claim is "grievance-determined."

Proponents of resource-mobilization theory argue, in the words of Oberschall (1978, p. 298), that since "grievances and disaffection are a fairly permanent and recurring feature of the historical landscape," they therefore cannot explain variation in protest and violent collective action. Resource-mobilization theorists emphasize group solidarity and the organizational strength of dissident groups as the major explanatory variables. The curvilinear and nonlinear forms of the income-inequality and regime-repressiveness hypotheses are sensitive to considerations of organizational capacity and mobilization.

In general, however, there are two problems with

ship between regime repressiveness and political violence conforms to a positively accelerated parabola—whatever that is.

² Another example of Hartman and Hsiao's misunderstanding of the regime-repressiveness hypothesis appears in the column labeled "Muller's Case." In my discussion of the regime-repressiveness hypothesis, I use the terms *open*, *closed*, and *intermediate repressiveness* to refer to properties of a political system—not to discrete cases. In Hartman and Hsiao's table, the implication is that the combination of high income inequality, high political repression, and low political violence characterizes a "closed" case; the combination of high income inequality, low political repression, and high political violence characterizes an "intermediate" case; and the combination of low income inequality, low political repression, and low political violence characterizes an "open" case. This is nonsense. A discrete case or instance of the property, "closed," would be a country with a regime characterized only by high repressiveness; high income inequality and low political violence are properties of separate variables. An instance of the property, "intermediate repressiveness," could not be low on political repression (as represented in Hartman and Hsiao's table), and it would have nothing to do definitionally with income inequality or political violence. An instance of the property, "open," would be a country with a regime characterized only by low repressiveness, regardless of the level of income inequality or the rate of political violence.

resource-mobilization theory. First, it has no explanation for why individuals are willing to be mobilized. Second, it is not directly testable at the macro level because good indicators of critical variables such as mobilization and organizational strength have not been devised (see Snyder 1978). My solution to the problem is to propose hypotheses that combine grievances and resource mobilization in their theoretical rationale. Income inequality is an indicator of motivational factors such as relative deprivation, political alienation, and ideology. These "grievances" (broadly defined) cannot be assumed to be relatively constant, since income inequality shows considerable cross-national variation. Although the causal mechanism of the inequality hypothesis is motivational factors of discontent, its functional form is sensitive to contingencies of mobilization. By contrast, the causal mechanism of the regime-repressiveness hypothesis can be interpreted as grounded in mobilization factors of resource organization and power contention. Thus, my model synthesizes the contending relative-deprivation and resource-mobilization approaches.

A second limitation of my model in Hartman and Hsiao's opinion is that all grievances are assumed to derive from income inequality. In this regard, my model is alleged to be deficient because it (1) ignores conflict between the repressors and the repressed and (2) assumes that economic fluctuations are irrelevant. The first allegation is wrong: acts of coercion undertaken by the government for the purpose of suppressing dissent are a direct measure of conflict between the repressors (the state) and the repressed (dissident groups); and such acts of governmental coercion, as defined operationally by the imposition of negative sanctions, are included (following Hibbs 1973) in my core multivariate model. In the short run, it hypothesizes that governmental acts of coercion will have a positive effect on political violence. The rationale for this hypothesis is that governmental acts of coercion are a source of grievances that provoke a violent response either on the part of those who suffer them (if they are not dead, injured, or incarcerated) or on the part of those who identify with the cause of the repressed and are motivated by moral indignation to join their ranks. The second allegation is correct: my model does not include the concept of economic fluctuation. Hartman and Hsiao claim that Chiro and Ragin and Lipset proposed political-violence models that included the concept of economic fluctuation as a major element. However, none of them proposed a general model of determinants of political violence cross-nationally. In any event, there have been numerous cross-national tests of the relationship between indicators of political instability and rates of economic growth or socioeconomic change more generally, but the results have been weak and inconsistent, prompting Zimmermann (1983, p. 101) to conclude that

"rapid socioeconomic change cannot be considered an important direct determinant of violence." This is why I did not include economic fluctuation in my political-violence model.

MEASUREMENT

Hartman and Hsiao are skeptical about the reliability of my dependent variable, deaths from political violence, because they believe "that measurement error [as a function of media bias] clearly plays a major role in generating the numbers that form the dependent variable." I do not discount problems of differential media sensitivity as a source of measurement error in counts of contentious political events cross-nationally. However, it is important to keep in mind the conclusion of Snyder and Kelly (1977) that media bias interacts with type of event, and that lethal events are more likely to be reported than nonlethal events—or, as Weede (1981, p. 648) puts it, "If people get killed for political purposes, that constitutes news wherever it happens." My decision to use death counts alone as the dependent variable, instead of the composite index used by others (e.g., Hibbs 1973), is based on the assumption (see Weede 1981) that death counts may be more reliable cross-nationally than other indicators of political violence.

If Hartman and Hsiao wish to challenge the reliability of the deaths indicator, they must give examples of serious under- or overreporting of death counts. However, the two examples of serious underreporting that they do cite, East Timor and Kampuchea, are in the former instance incorrect³ and in the latter quite specious.⁴

³ The case of East Timor is false because in 1975 it was still a territory belonging to Portugal. According to Banks and Overstreet (1980, pp. 227–28), the violent conflict in East Timor began as a civil war between two political parties (Apodeti and the PDU) that favored integration with Indonesia and links to Portugal and a party (Fretilin) that favored complete independence. The Fretilin forces were initially victorious, prompting Indonesia to invade and defeat them. East Timor then was annexed by Indonesia in 1976, although this action was not recognized either by Portugal or by the United Nations. Therefore, the *World Handbook* coders were correct in not assigning any of the deaths that occurred in East Timor to Indonesia. They were also correct in not assigning them to Portugal, since East Timor was not a part of the state of Portugal. Hartman and Hsiao imply that the violence in East Timor should have been coded as either a Portuguese or Indonesian event. This is a misunderstanding of the coding procedure for these data. Protest events occurring in dependent territories are coded for the territory, not the "mother" country (e.g., protest events in Angola

Therefore, I cannot give credence to their claim that the deaths variable in general is subject to serious measurement error.⁵ It is well known, of course, that deaths are underreported and that the degree of underreporting is positively related to the magnitude of internal war (see Taylor and Jodice 1983, vol. 2, p. 47). I correct for the problem of underreporting of deaths in major civil wars first by logging the deaths variable and, most important, by setting a ceiling on it. Thus, instances of underreporting of extreme cases would not affect the results of the statistical analyses.

In regard to the issue of what Hartman and Hsiao call "omitted variable bias," this is not a measurement deficiency of the deaths variable but rather a problem of model specification. If during a given time interval there are a significant number of deaths due to external invasion, the administra-

and Mozambique are coded for these territories as separate entities instead of for Portugal). The reason why the *World Handbook* deaths variable "underreports" the violence in East Timor is that East Timor is not included in the data set.

⁴ The case of Kampuchea, which Hartman and Hsiao consider to be even more telling evidence of measurement bias than East Timor, is specious because they forget to mention that Taylor and Jodice (1983, vol. 2) do report substantial deaths in Kampuchea for the years of the civil (and interstate) conflict that raged from 1968 to 1975 (the total death count for these years is 55,884). The Khmers Rouges were victorious in 1975, and the Pol Pot regime took power in early 1976. At this point, the civil war had ended (temporarily), so the *World Handbook* coders would appear to be correct in not reporting any deaths from political violence in Kampuchea during 1976 and 1977. Moreover, Hartman and Hsiao ignore the fact that Taylor and Jodice do report a large number of deaths due to political executions in Kampuchea during 1976 and 1977. Indeed the 250 deaths from political executions reported for the first two years of the murderous Pol Pot regime was the second highest execution count in the world for 1976–77 next to Uganda.

⁵ Hartman and Hsiao assert without supporting evidence that "there are a very large number of zero values in non-Western societies where . . . the press is less developed." This statement is absurd. For all independent political units during the 1948–77 period, if one divides the data on deaths from political violence into six five-year intervals, it turns out that by far the largest number of instances of zero deaths per five-year interval occurs in the Europe and North American region, i.e., Western societies. The incidence of zero deaths per five-year interval is relatively small in Asia and in Sub-Saharan Africa, and it is very small in the Middle East and North Africa and in Central and South America.

tive use of terror, and interethnic violence, these variables should be controlled for. With respect to the question of external invasion, contrary to the claim of Hartman and Hsiao, Lebanon was *not* invaded by either Syria or Israel during the time period when the Lebanese case was used (the initial period, 1958–67). Also, the cases of Czechoslovakia and the Vietnams were not included in either of my tests.⁶ Pakistan, an instance of external invasion (by India over the secession of Bangladesh) overlooked by Hartman and Hsiao, was included in the subsequent period (1968–77). If it had been deleted (see Muller and Seligson 1987), the income-inequality effect would have been sharper. Otherwise, there are no confounding instances of external invasion in the data.⁷ With respect to the administrative use of terror, the extreme case of Uganda is not one of the countries in my analysis. In general, however, this would be an important variable to control for. Finally, I do recognize the need to control for interethnic conflict, hence the inclusion of the ethnolinguistic-fractionalization and political-separatism variables.

Hartman and Hsiao are especially critical of my use of the Gastil ratings of political and civil rights to operationalize the concept of regime repressiveness. First, they claim that the Gastil ratings are unreliable because "American client states are coded as 'partly free' regardless of the amount of terror produced by their regimes." However, all American client states are not coded "partly free." Of the 26 American client states listed by Chomsky and Herman (1979, frontispiece), 15 percent have scores in the range of 5.6–7.0 on the regime-repressiveness variable constructed from the Gastil

ratings for 1973–77,⁸ and another 35 percent have scores close to this level (i.e., between 5.0 and 5.5).⁹ Thus the Gastil ratings do not seem to be biased in favor of giving nonrepressive ratings to American client states. Moreover, it should be remembered that the Gastil ratings measure freedom and its lack, as manifested in institutions. Political terror is an extreme instance of governmental acts of coercion, which is analytically and empirically distinct from the repressiveness of the regime structure. Gastil (1979, pp. 31–39) measures the administrative use of terror by governments separately from political and civil rights. On the political-terror scale, El Salvador and Guatemala are rated at level D (relatively high), whereas Hungary is rated at level B (relatively low), and Yugoslavia is rated at level C (intermediate). Thus, according to Gastil, during the mid-1970s El Salvador and Guatemala had higher levels of political terror but lower levels of regime repressiveness than Hungary and Yugoslavia. Hartman and Hsiao should recognize that *institutionalized* repressiveness is analytically and empirically distinct from behavioral repression, instead of condemning a measure of the former because it does not coincide with the latter.

Second, Hartman and Hsiao dispute the validity of the regime-repressiveness measure because "it is not obvious that the absence of multiparty elections is the same as repression." But Gastil's political and civil rights scales take many other factors into account in addition to the presence or absence of multiparty elections (see the description of Gastil's coding procedures and the comments on data quality in Taylor and Jodice, 1983, vol. 1, pp. 60–61, 64–65). Therefore, although this criticism would be appropriate for a measure based only on the property of multiparty elections, it is simply not relevant to the regime-repressiveness measure.

Third, the validity of regime repressiveness also is disputed by Hartman and Hsiao on the grounds that it "equates the private sector and the market with freedom." This particular criticism is simply wrong. According to Gastil (1978, pp. 44–45), 37 countries were coded as "not free" in regard to political and civil liberties, yet had free-market economies in 1977 (e.g., Chile, Jordan, Ivory Coast, Thailand), whereas 48 countries were coded only as "partly free" in regard to political and civil liberties, yet had free-market economies (e.g., Brazil, Kenya, Malaysia, Morocco).¹⁰ There are thus 85 exceptions for the year

⁶ The case of Czechoslovakia appears to be another instance of a false example cited by Hartman and Hsiao in support of a generalization. Taylor and Jodice (1983, vol. 2, p. 50) report only 12 deaths from political violence in 1967 in Czechoslovakia and 13 deaths in 1969. This is not a large number either absolutely or relative to population size. Thus, unless the *World Handbook* data are seriously mistaken, the Soviet invasion of Czechoslovakia in 1968 did not cause a large number of deaths.

⁷ In my opinion it is quite misleading of Hartman and Hsiao to say that the cases they cite of deaths from foreign invasion are only a few of the instances of this phenomenon, implying to the reader that there are many instances. For example, during the 1973–77 period I find only six instances of foreign invasion being potentially responsible for some portion of deaths from domestic political violence (see note 13). Otherwise, foreign invasion was irrelevant in 81 cases where some deaths from political violence occurred. This very small incidence of foreign invasion is typical of earlier periods as well.

⁸ These are Haiti, Iran, Peru, and Saudi Arabia.

⁹ These are Bolivia, Chile, Indonesia, Paraguay, the Philippines, South Korea, South Vietnam, Spain, and Tunisia.

¹⁰ Free-market economies include those classified as capitalist, capitalist-statist, and capitalist-socialist by Gastil (where the capitalist-socialist category encompasses economies similar to those in the Scandinavian countries).

Table 1. Regressions[†] of Political Violence Death Rate, 1973–77, on Regime Repressiveness and Previously Omitted Variables

	In Political Violence Death Rate, 1973–77		In Adj. Political Violence Death Rate, 1973–77	
	(1.1)	(1.2)	(1.3)	(1.4)
Intercept	–1.06	–0.52	–0.77	–0.50
Regime repressiveness, 1973–77	+1.42** (3.33)	+0.83** (2.95)	+1.16** (4.13)	+0.85** (3.76)
Regime repressiveness, ² 1973–77	–0.17** (–3.13)	–0.11** (–3.09)	–0.14** (–3.97)	–0.11** (–4.00)
External invasion, 1973–77		+5.52** (10.12)		+2.03** (4.64)
Political terror, ca. 1975		+0.69** (2.31)		+0.70** (2.95)
Intensity of separatism, 1975		+1.74** (5.97)		+1.38** (5.92)
Adj. R ² = (N)	.07 (131)	.61 (131)	.10 (131)	.45 (131)

[†] *t* ratio in parentheses.

** *p* < .05, one-tailed.

1977 to the claim of Hartman and Hsiao that Gastil equates economic freedom (or capitalism) with political freedom (or democracy)!

Finally, Hartman and Hsiao observe that the income-inequality variable is not free of error (see note 8). I have sought to avoid some fairly serious problems of noncomparability overlooked in other data sets, but the data that I use certainly are not free of error. These measurement inadequacies are inherent in the income-inequality data currently available, so the options are either to reject the use of income inequality altogether or attempt to minimize the error and work with the least unsatisfactory estimates possible for the largest number of cases.

MODEL SPECIFICATION AND HYPOTHESIS-TESTING PROCEDURE

The most useful criticisms of my model by Hartman and Hsiao concern omitted-variable bias. In the test with the 1973–77 death rate as the dependent variable, I failed to control for external invasion, political terror, and intensity of separatism. Also, in the bivariate test of the regime-repressiveness hypothesis, I used only the subset of cases with information on income inequality.¹¹

¹¹ Hartman and Hsiao report a test of the regime-repressiveness hypothesis across 133 cases (see their note 9) and conclude that, although the signs of the parameter estimates support my hypothesis, they are very volatile. But it is not clear what is meant by “volatile” in this context, since they are referring to bivariate results. Moreover, they go on to claim that the signs in an

Equation 1.1 of Table 1 reports a test of the regime-repressiveness hypothesis across 131 cases without controlling for omitted variable bias.¹² The results clearly support my inverted U-curve hypothesis, but accuracy of prediction is weak. There are many outliers with extreme values of the dependent variable. In the second equation, I control for omitted-variable bias by introducing dummy variables for external invasion,¹³ political terror,¹⁴ and intensity of separatism.¹⁵ The impor-

allegedly completely specified equation “change and become significant in the opposite direction.” This claim is impossible to evaluate without the empirical evidence, which they fail to report.

¹² Angola, Hong Kong, Mozambique, Papua New Guinea, and Puerto Rico are excluded because they were dependent territories in 1973. Ireland is excluded because the violence that occurred there during 1973–77 was spillover from the Northern Ireland conflict.

¹³ The following countries are scored 1 on External Invasion: Cyprus (by Greece and Turkey); Ethiopia (by Somalia); Kampuchea and Laos (by North Vietnam and the Vietcong and by South Vietnam and the United States); Lebanon (by Syria); and South Vietnam (by North Vietnam and the United States).

¹⁴ Countries are scored 1 on Political Terror if they received a “Level D” or “Level E” rating by Gastil (1979, pp. 38–39).

¹⁵ Countries are scored 1 on Intensity of Separatism if they were coded 3 or 4 by Ted and Erika Gurr (see Taylor and Jodice, 1983, vol. 1, pp. 72–5). Countries with missing data were scored 1 in the cases of Chad, Cyprus, and

tance of taking these additional sources of variation into account is underscored dramatically by the increase in adj. R^2 , which rises from .07 in equation 1.1 to .61 in equation 1.2. An equally important finding is that the parameter estimates for regime repressiveness and its square have the correct signs and remain significant in 1.2.

The distribution of the death-rate variable is highly skewed, even after logging. The solution to the nonnormality problem that I have proposed (see Muller, 1986, pp. 442–43) is to set a ceiling on the death rate of 50 per million. I argue that it is preferable to use the adjusted death rate because results will be less sensitive to influential cases. Equation 1.3 shows that the regime-repressiveness hypothesis is again supported when the dependent variable is the 1973–77 adjusted death rate. And it is once again supported in equation 1.4, when the controls are introduced for omitted-variable bias.

Hartman and Hsiao call the positive effect of inequality on political violence into question because their analysis of the 1968–72 wave of the panel model leads them to conclude that the effect of income inequality changes sign. Ironically, their results are due to a failure to control for omitted variable bias. Equation 2.1 of my Table 2 includes the same variables as Hartman and Hsiao's equation 5 from their Table 1. My equation 2.1 is based on 44 cases with information on income inequality for the years 1960–69 (from Table 1 of Muller 1985).¹⁶ These 44 cases are not the same as those used by Hartman and Hsiao in their Table 1, however, because they replace 12 cases from my data set with 12 new cases,¹⁷ and quite different income inequality measurements are substituted in some of the remaining 32 cases. Their income inequality measurements are in many instances ones that I rejected as being insufficiently reliable or comparable.¹⁸ In any event, their finding of a sta-

tistically significant negative instead of positive effect of inequality on violence is confirmed. But it is not robust, as equation 2.2 demonstrates. If Hartman and Hsiao had followed their own recommendation to include a dummy variable for external invasion, they would have discovered that the sign reversal of the inequality parameter estimate results from a single deviant case, Pakistan,¹⁹ which was subject to external invasion and had an extremely high death rate (by far the highest of the cases with information on income inequality), despite a very low inequality score.²⁰ When the external invasion variable is introduced into the prediction equation (2.2), the lagged effect of inequality on political violence is virtually zero.

Equations 2.1 and 2.2 of Table 2 tested for the presence of a lagged effect of income inequality on change in political violence. Following the recommendation of Weede (1986, p. 438), one also should test for the presence of a more or less

addition to individual persons; thus, as Lydall (1979, p. 35) points out, "The top 5 percent of 'persons' includes a large proportion of private-company undivided profits." Puerto Rico should not be included because the population is independent states, whereas Puerto Rico is a dependent territory of the United States. The income recipient unit in Bulgaria, Czechoslovakia, Hungary, and Poland is "workers." It is not clear exactly how the population of "workers" is defined; in any event, "workers" are not comparable with the income recipient units that I used (principally households). The data for Morocco were judged to be unreliable by the author of the compilation in which they were reported (Paukert 1973). The data for Sierra Leone are both noncomparable (the Western Province is excluded) and unreliable (the lowest decile is listed as receiving zero income). See footnote 1 of Muller (1985) for a previous statement of most of these points.

¹⁹ The simple correlation between income inequality and the political violence death rate is positive but very small ($r = +.11$), and Pakistan is an extreme outlier. This is a warning signal that unusual results in the multivariate context, such as a sign reversal, may be due to the influence of the outlier.

²⁰ Pakistan is the only country in the sample that was subject to external invasion during 1968–72. Pakistan's extremely high 1968–72 death rate resulted from the civil war over the secession of Bangladesh, during which Indian troops invaded East Pakistan in support of the Bengali rebels. Thus, the Pakistani outlier also can be attributed to intensity of separatism. Since the income-inequality data for Pakistan also appear to seriously underestimate the incomes of higher-income groups (see van Ginneken 1976, p. 14), the measurement for Pakistan probably should not have been used in the first place.

Ethiopia; 0 otherwise (based on country descriptions from Banks 1976).

¹⁶ For testing the hypothesis of a lagged effect of 1963–67 income inequality on 1968–72 political violence, I accept data for up to three years before and two years after the target period as an estimate of income inequality during that period.

¹⁷ The excluded cases have income inequality measurements for 1960–62 and 1969. Hartman and Hsiao do not explain why income inequality measurements for these years should not be used as an estimate of the 1963–67 interval, whereas 1968 apparently is acceptable.

¹⁸ Hartman and Hsiao use measurements based on tax statistics for Denmark, Finland, Norway, and Sweden. These data are not comparable with those from population surveys because the distribution is downwardly biased among lower percentiles and upwardly biased among high percentiles (see Sawyer 1976). The West German data include private companies as income recipient units in

Table 2. Regressions⁺ of Political Violence Death Rate, 1968–72 and 1963–67, on Income Inequality, 1960–69, and Other Explanatory Variables

	In Political Violence Death Rate, 1968–72		In Political Violence Death Rate, 1963–67	
	(2.1)	(2.2)	(2.3)	(2.4)
Intercept	6.56	3.72	-3.07	-3.33
External Invasion, 1968–72		+5.39** (4.45)		
Upper 20% Income Share, 1960–69	-0.06** (-1.94)	-0.02 (-0.67)	+0.08** (2.73)	+0.08** (2.93)
ln Energy Consumption p.c., 1965	-0.58** (-3.63)	-0.44** (-3.24)	-0.07 (-0.42)	
ln Negative Sanctions per 1m, 1968–72	+1.17** (3.07)	+1.05** (3.36)		
ln Negative Sanctions per 1m, 1963–67			+0.51* (1.48)	+0.57** (2.33)
ln Negative Sanctions per 1m, 1958–62			-0.15 (-0.51)	
Ethnolinguistic Fractionalization, 1960	-0.05 (-0.06)	+0.15 (0.23)	+1.03 (1.20)	
Intensity of Separatism, 1960			+0.51 (0.91)	
ln Political Violence Death Rate, 1963–67	+0.35** (2.13)	+0.16 (1.10)		
Adj. R ² (N)	.44 (44)	.63 (44)	.37 (44)	.35 (44)

⁺ t ratio in parentheses

* $p < .10$, one-tailed

** $p < .05$, one-tailed

simultaneous effect of inequality on level of violence. These results are reported in equations 2.3 and 2.4.²¹ They show quite strong support for the inequality hypothesis. Therefore, it would be incorrect to conclude that income inequality during 1960–69 was unrelated to political violence. It has a simultaneous but not a lagged effect.

CONCLUSION

Previous investigations of the relationship between income inequality and political violence have relied on single tests (Hardy 1979; Sigelman and Simpson 1977; Weede 1981). As a check on the robustness of results, I conducted tests across two time periods, 1958–67 and 1968–77, both of which supported the hypothesis. Since the results of the second test were weaker than the first, I concluded that there is a significant relationship between income inequality and political violence, but that its strength waxes and wanes. Now, from analysis

of different years and different case bases, I see no reason to alter my conclusion that inegalitarian societies are susceptible to relatively high rates of political violence (for further evidence, see Muller and Seligson 1987). Nor do I see any reason to alter my conclusion that societies with semirepressive regimes also are most susceptible to high rates of political violence. However, since this has been demonstrated for only a single time period, the robustness of the inverted U-curve between regime repressiveness and political violence remains an important topic for future research.

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²¹ The N is 44 instead of 42 because Honduras and Sierra Leone, the two cases with missing data on intensity of separatism from Taylor and Jodice (1983, vol. 1), were scored 0 (based on country descriptions from Banks 1976).

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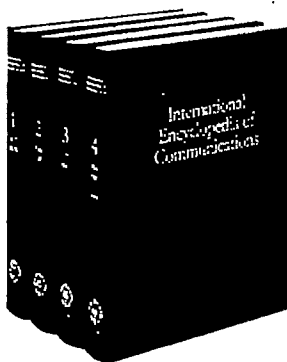
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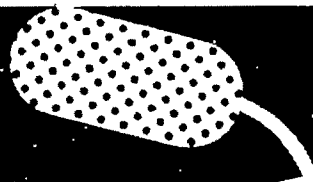
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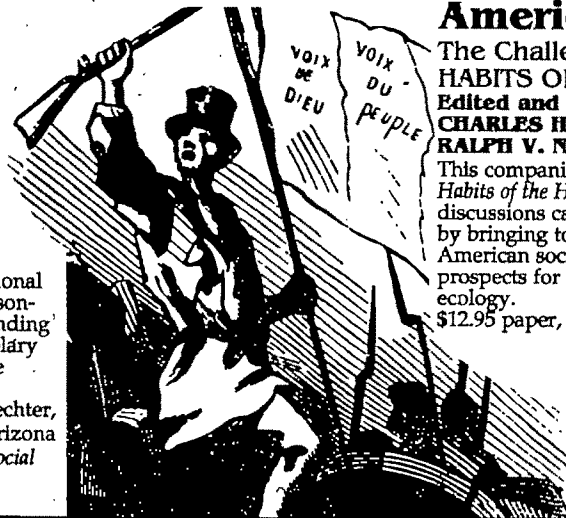
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